ROHDE&SCHWARZ

Test and Measurement
Division

Service Manual

VECTOR SIGNAL GENERATOR

SMIQ02B/03B/04B/06B

10125.5555.02/03/04/06

Volume 3
Service manual consists of 4 volumes

Printed in the Federal
Republic of Germany

Safety Instructions

This unit has been designed and tested in accordance with the EC Certificate of Conformity and has left the manufacturer's plant in a condition fully complying with safety standards.

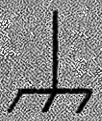
To maintain this condition and to ensure safe operation, the user must observe all instructions and warnings given in this operating manual.

Safety-related symbols used on equipment and documentation from R&S:

Observe operating instructions

Weight indication for units >18 kg

PE terminal



Ground terminal

Danger! Shock hazard

Warning! Hot surfaces

Ground

Attention! Electrostatic sensitive devices require special care

1. The unit may be used only in the operating conditions and positions specified by the manufacturer. Unless otherwise agreed, the following applies to R&S products:

   IP degree of protection 2X, Pollution severity 2, overvoltage category 2, altitude max. 2000 m.

   The unit may be operated only from supply networks fused with max. 16 A.

2. For measurements in circuits with voltages V_{rms} > 30 V, suitable measures should be taken to avoid any hazards.

   (using, for example, appropriate measuring equipment, fusing, current limiting, electrical separation, insulation).

3. If the unit is to be permanently wired, the PE terminal of the unit must first be connected to the PE conductor on site before any other connections are made. Installation and cabling of the unit to be performed only by qualified technical personnel.

4. For permanently installed units without built-in fuses, circuit breakers or similar protective devices, the supply circuit must be fused such as to provide suitable protection for the users and equipment.

5. Prior to switching on the unit, it must be ensured that the nominal voltage set on the unit matches the nominal voltage of the AC supply network.

   If a different voltage is to be set, the power fuse of the unit may have to be changed accordingly.

6. Units of protection class I with disconnectible AC supply cable and appliance connector may be operated only from a power socket with earthing contact and with the PE conductor connected.

7. It is not permissible to interrupt the PE conductor intentionally, neither in the incoming cable nor on the unit itself as this may cause the unit to become electrically hazardous.

   Any extension lines or multiple socket outlets used must be checked for compliance with relevant safety standards at regular intervals.

8. If the unit has no power switch for disconnection from the AC supply, the plug of the connecting cable is regarded as the disconnecting device. In such cases it must be ensured that the power plug is easily reachable and accessible at all times (length of connecting cable approx. 2 m). Functional or electronic switches are not suitable for providing disconnection from the AC supply.

   If units without power switches are integrated in racks or systems, a disconnecting device must be provided at system level.

9. Applicable local or national safety regulations and rules for the prevention of accidents must be observed in all work performed.

   Prior to performing any work on the unit or opening the unit, the latter must be disconnected from the supply network.

   Any adjustments, replacements of parts, maintenance or repair may be carried out only by authorized R&S technical personnel.

   Only original parts may be used for replacing parts relevant to safety (eg power switches, power transformers, fuses). A safety test must be performed after each replacement of parts relevant to safety.

   (visual inspection, PE conductor test, insulation-resistance, leakage-current measurement, functional test).

continued overleaf

10. Ensure that the connections with information technology equipment comply with IEC950 / EN60950.
11. Lithium batteries must not be exposed to high temperatures or fire.

    Keep batteries away from children.

    If the battery is replaced improperly, there is danger of explosion. Only replace the battery by R&S type (see spare part list).

    Lithium batteries are suitable for environmentally-friendly disposal or specialized recycling. Dispose them into appropriate containers, only.

    Do not short-circuit the battery.
12. Equipment returned or sent in for repair must be packed in the original packing or in packing with electrostatic and mechanical protection.
13. Electrostatics via the connectors may damage the equipment. For the safe handling and operation of the equipment, appropriate measures against electrostatics should be implemented.
14. Any additional safety instructions given in this manual are also to be observed.

Contents

Volume 1

Volume 2

Volume 3

Volume 4

ROHDE&SCHWARZ

SERVICE INSTRUCTIONS

Attenuator

1008.7252.02

Contents

7. Testing and Repair of the Module

7.1 Function Description

7.1.1 Attenuator with Overvoltage Protection

The attenuator is connected between the output module and the instrument output. It is used to attenuate the signal in steps of 5 db. It consists of six attenuator pads of 5,10,2*20 and 2*40 dB, an overvoltage-protection substrate and a 50-Ohm terminator. The attenuator pads can be switched on or bypassed by means of one contact group each, which conists of three individual contacts. Each of these contact groups is actuated by a rocker, which is driven by a magnetic coil and kept in end position by a permanent magnet.
The overvoltage-protection substrate and the output switch are situated on the attenuator subsequent to the attenuator pads. The output switch is opened immediately in case of overvoltage and with switching off the instrument (ACFAIL signal).
The overvoltage protection protects the attenuator pads and the output amplifier against exceeded RF and DC voltages, which may be applied to the RF socket. In conjunction with the integrated detector, a diagnosis of the attenuator pads with the associate contact groups can be carried out.

7.1.2 Control of the Attenuator Pads

The attenuation of the attenuator is set via serial data transmission by means of the instrument-specific "SERBUS" interface. The buffer memory keeps the voltage for a few ms; the polarity of the voltage in the magnetic coils actuates the contact rockers in either of the two directions. (cf. fig. 1). For the state where the voltage is zero the same polartity is applied to the other relay contacts.

7.1.3 Control of the Overvoltage Protection

An overvoltage applied to the output socket is detected by peak rectification on the overvoltage-protection substrate. The comparator N1 responds and directly actuates the output switch Z9 at E7-A7 via D4. The PIN diodes on the overvoltage-protection substrate short-circuit the overvoltage during the response time of the output switch Z9. For this purpose, a high DC current is impressed upon the PIN diodes via the two monoflops V1 and V2. The controller is informed on the overvoltage via the SERBUS INTerrupt.

7.1.4 Diagnosis

The diodes on the overvoltage-protection substrate are operated via D9 as peak rectifiers. The rectified voltage is then available on the diagnostic line DIAG-5V. The attenuator pads with the associate contact groups can thus be checked.

7.2 Test Instruments and Utilities

Dual-channel storage oscilloscope 100MHz	e.g., BOS
Network analyzer up to 3GHz	e.g., hp8753
50-Ohm SMA terminator up to 3GHz, VSWR<1.1	
Power-signal generator 25dBm	e.g., SMGL, SMLU
Voltmeter	e.g., UDL33
High-precision attenuator 0 to 120dB, res. 0.1dB	e.g., DPSP
Test receiver 100MHz, sensitivity <0dBuV	e.g., ESV

7.3 Troubleshooting

Output level cannot be set	Check the control code of the individual attenuator pads according to 7.4.3. Do the control pulses correspond to fig. 1
The output switch does not open with switching off the instrument	Check the ACFAIL signal and the control of the output switch acc. to 7.4.4

7.4 Testing and Adjustment

7.4.1 Adjustment of the Attenuator Pads

- Connect network analyzer to X2 (=gate1) and X1 (=gate2).
- Settings: **LEVEL 13dBm**

VSWR measurement: It must not exceed the value 1.35 up to 1.5 GHz and the value 1.5 from 1.5 GHz to 3 GHz
Measurement of the transmission loss: It must not exceed 0.4 dB with 1 MHz. The permitted maximum value shall linearly increase to 2.2 dB up to 3 GHz. Store the measured curve and use as reference value (0dB). Carry out the following steps for each of the attenuator pads Z1 to Z6 (setting via "DIRECT_MODE"): check the attenuation characteristic and adjust in the frequency range 1 to 3 GHz using a grub screw. Make sure that
a.) the deviation from the rated value is minimum across the entire frequency range and
b.) the maximum pos. and neg. deviations from the rated value have the same absolute value (e.g., +-0.5dB).
The max. permitted deviation from the rated value of attenuation is +-0.2dB. Finally, check the 50-Ohm terminator (Z9), by means of setting the attenuator to 0dB transmission, RF-OFF, (via "DIRECT-MODE") and measuring S11. The max. permitted reflection coefficient is 40% (VSWR=2.5).

7.4.2 Testing the Overvoltage Protection

Prevoltage of the protection diodes:
-The check is carried out without an RF power being applied
- Settings: **LEVEL 13dBm**

Measure the DC voltage at the loop-through filters Z10 and Z11 or X20 A and X20 B. V at Z10: 2.9V+-0.2V; V at Z11: -2.9V+-0.2V.

· Settings: **DIAG STATE ON**
TPOINT 1100

Measure the DC voltage at the loop-through filters Z10 and Z11 and X20 A and X20 B. V at Z10: -0.4V+-0.2V; V at Z11: -2.9V+-0.2V.

7.4.2.1 Testing the Response Threshold

· Settings: **LEVEL 13dBm**

RF check:
Apply a signal of 25MHz, 20dBm to the output X1. Increase level until the overvoltage protection just responds. It must be between 24.5 and 26.5dBm.

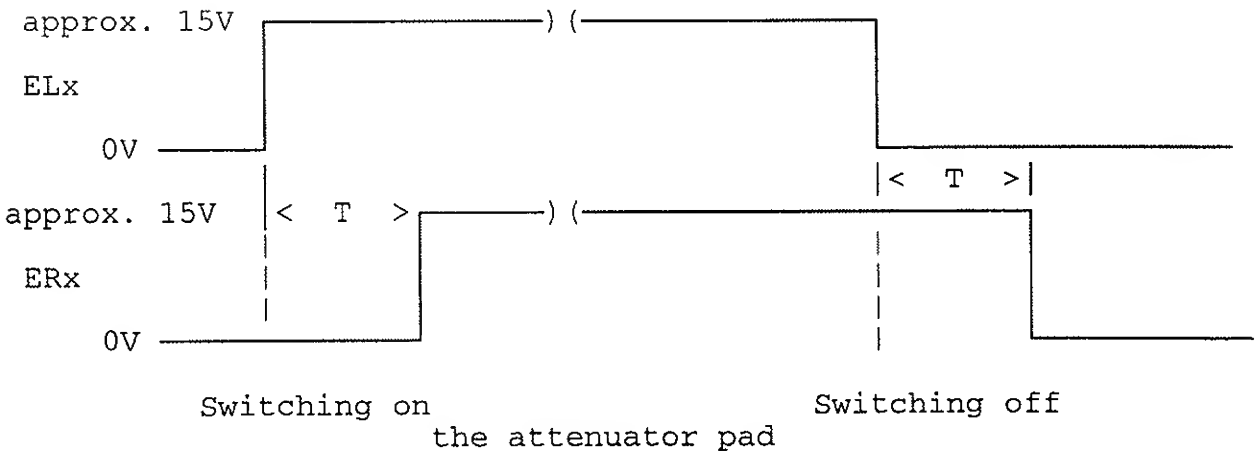
Checking the DC voltage:
Apply +-6V to X1 via a 50-Ohm resistor. The output switch Z9 must open with positive and negative voltages.

7.4.3 Testing the Control Pulses

· Connect an oscilloscope to the respective ELx or ERx-outputs. Set level according to the table below and check the control pulse acc. to fig. 1:

LEVEL[dBm]	Attenuator pad
13	-
8	Z3
3	Z5
-7	Z4
-27	Z6
-67	Z1(+Z6)
-107	Z2(+Z1+Z6+Z4)

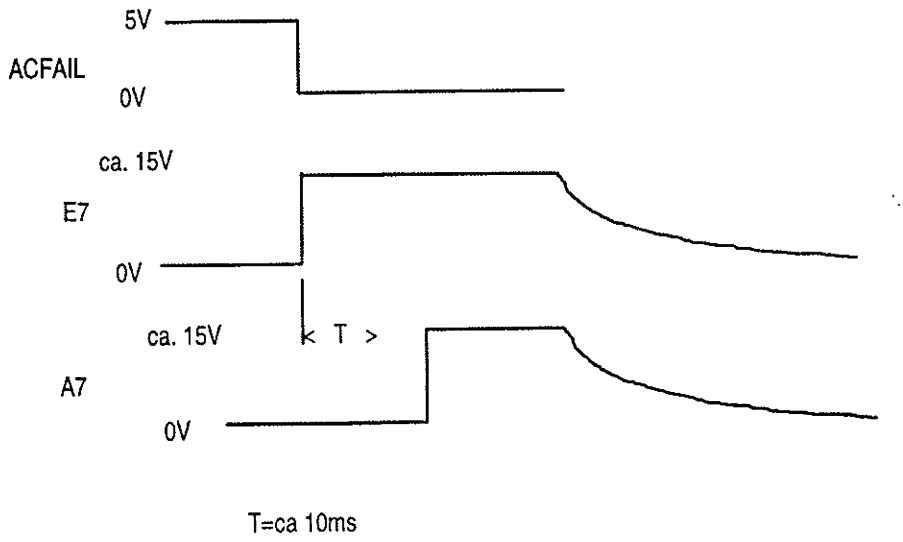
Fig. 1 Control Pulse of the Attenuator Pads



7.4.4 Testing the Output Switch

- Connect an oscilloscope to W150.2 (ACFAIL),E7 and A7.
- Switch off the instrument.
  Check according to fig. 2.

Fig. 2 Control pulse with instrument switch-off



7.5 Removal and Assembly

To remove the attenuator, take off the panelling and unscrew the front module. Disconnect the RF cable from X2 and the ribbon cable at X15. The complete attenuator including the clips can be removed after undoing 4 screws on the side brace and one screw at the bottom. Disconnect the cable at X20 and carefully withdraw the control subsequent to undoing 4 screws on the mechanical attenuator. Make sure with assembly that the pins on the mechanical attenuator are not bent when plugging in the control unit.

Note: The max. torque at the SMA connectors X1 and X2 must not exceed 100 Ncm!

7.6 External Interfaces

Pin	Name	Input/Output	Origin/Destin.	Specified range	Signal description
W150.1	SERBUS-CLK	Input	A3, FRO X50.40	HCMOS level	Serbus clock
W150.3	SERBUS-DAT	bidir.	A3, FRO X50.39	HCMOS level	Serbus data
W150.5	SERBUS-SYNC	Input	A3, FRO X50.37	HCMOS level	Serbus synchronisation
W150.8	SERBUS-INT	Output	A3, FRO X50.38	HCMOS level	Serbus interrupt
W150.9	RES-P	Input	A3, FRO X50.28	HCMOS level	Serbus reset
W150.11	DIAG-5V	Output	A3, FRO X50.44	-5V to 5V	Diagnosis
W150.13 W150.14	VA15-P	Input	A2, POWS1	14.85V to 15.75V max. 1400mA	Supply voltage, analog
W150.16	VD-5P	Input	A2, POWS1	5.10V to 5.25V max. 60mA	Supply voltage, digital
W150.15	VA15-N	Input	A2, POWS1	-15.75V to -14.85V max. 135mA	Supply voltage, analog
W150.2	ACFAIL#	Input	A2, Pows1	HCMOS level	Voltage monitoring
X1	RF-Output	Output	Output socket	..16dBm, ..3GHz	
X2	RF-Input	Input	Input socket	..16dBm, ..3GHz	
W150.4/6/7/17/12					Ground

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet

Part lists
in numerical order

Listes des pièces détachées
par numéros de référence

Comp. No.	Designation	Stock No.	Manufacturer	Designation	Remarks
A150	EE EICHLEITUNGSSTEUERUNG ATTENUATOR CONTROL UNIT	1038.6960.02			
K1 ..1 ..6	LD ELEKTROMAGNET (EICHL.) ELECTROMAGNET	1067.7978.00			1008.7269.00 F
K6	LD ELEKTROMAGNET (EICHL.) ELECTROMAGNET	1067.7978.00			1008.6610.00
K9	LD ELEKTROMAGNET (EICHL.) ELECTROMAGNET 7ST.AUS 294.8754"	1067.7978.00			1008.7269.00
K9	LD ELEKTROMAGNET (EICHL.) ELECTROMAGNET 7ST.AUS 294.8754"	1067.7978.00			1008.6610.00
W12	DX KABEL W12 CABLE W12	1008.7275.00			
W150	DY KABEL W150 CABLE W150	1085.0442.00			
X1	FJ EINBAUBUCHSE SYST.SMA SOCKET	FJ 0294.8154.00	ROSENBERGE	32K-111-500-D3	1008.6327.00
X2	FJ EINBAUBUCHSE SYST.SMA SOCKET	FJ 0294.8154.00	ROSENBERGE	32K-111-500-D3	1008.6327.00
Z1	DT DAEMPF.-GLIED(40DB) ATTENUATOR 40DB/50	0912.5269.00			1008.6327.00
Z2	DT DAEMPF.-GLIED(20DB) ATTENUATOR 20DB/50	0912.5252.00			1008.6327.00
Z3	DT DAEMPF.-GLIED(5DB) ATTENUATION 5DB/50	0912.5281.00			1008.6327.00
Z4	DT DAEMPF.-GLIED(20DB) ATTENUATOR 20DB/50	0912.5252.00			1008.6327.00
Z5	DAE-GLIED 10DB / 8.5GHZ	1054.3633.00			1008.6327.00
Z6	DT DAEMPF.-GLIED(40DB) ATTENUATOR 40DB/50	0912.5269.00			1008.6327.00
Z7	DT ANSCHLUSSLEITUNG CONNECTION LINE	0915.0800.00			1008.6327.00
Z8	BD UEBERSP.-SCHUTZ(SME)	1054.3685.00			1008.6327.00
Z9	LD PI-FILTER FILTER	1008.5850.00			1008.6327.00
Z10	LD PI-FILTER FILTER	1008.5850.00			1008.6327.00

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
A151	EE EICHLEITUNGSSTEUERUNG	1038.6960.06			
K1 ..1 ..7	LD ELEKTROMAGNET (EICHL.) ELECTROMAGNET 7ST. AUS 294.8754"	1067.7978.00			1008.7430.00 F
K7	LD ELEKTROMAGNET (EICHL.) ELECTROMAGNET 7ST. AUS 294.8754"	1067.7978.00			1008.6627.00
W150	DY KABEL W150 CABLE W150	1085.0442.00			
X1	FJ EINBAUBUCHSE(SMA) CONNECTOR SMA	0920.0140.00			1008.7417.00
X2	FJ EINBAUBUCHSE(SMA) CONNECTOR SMA	0920.0140.00			1008.7417.00
Z1	DT DAE-GLIED 40DB S	1054.3456.00			1008.7417.00
Z2	DT DAE-GLIED 20DB S	1054.3440.00			1008.7417.00
Z3	DT DAE-GLIED 5DB/50	1054.3227.00			1008.7417.00
Z4	DT DAE-GLIED 20DB S	1054.3440.00			1008.7417.00
Z5	DT DAE-GLIED 10DB S	1054.3433.00			1008.7417.00
Z6	DT DAE-GLIED 40DB S	1054.3456.00			1008.7417.00

1ZKS 887 3PLU	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr. Page
ROHDE&SCHWARZ	06	07.10.99	ZE EICHLEITUNG SME 6GHZ	**1008.7400.01 SA**	1-

ROHDE&SCHWARZ

XY-Liste

XY List

Erklärung der Spaltenbezeichnungen:

el. Kennz.	Bauelement-Kennzeichen
Seite	Leiterplatten-Seite, auf der sich das Bauelement befindet
X/Y	Koordinaten (in Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt
Planq., Bl.	Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement

Explanation of column designations:

Part	Identification of instrument part
Side	Side of the PC board on which instrument part is positioned
X/Y	Coordinates (in units of millimeters) of the component on the PC board in reference to zero point
Sqr, Pg	Square and page of the diagram for the respective instrument part

Nicht–Service–Relevante Bauteile / Non–Service–Relevant Components

el. Kennz. *Part*	Seite *Side*	X	Y	Planq. *Sqr*	Bl. *Pg*
C1	B	32	31	1E	2
C2	B	42	1	2E	2
C3	B	52	14	2F	2
C4	B	43	29	2E	2
C6	B	67	15	1F	2
C7	B	79	14	2F	2
C8	B	92	14	3F	2
C9	B	14	27	1C	2
C10	B	14	13	1B	2
C11	B	126	29	3A	1
C12	B	125	20	3A	1
C13	B	114	24	3C	1
C14	B	124	27	4E	1
C15	B	119	18	3D	1
C16	B	108	16	2C	1
C17	B	69	3	5E	2
C18	B	70	36	5E	2
C19	B	57	36	6E	2
C20	B	83	3	7E	2
C21	B	83	36	8E	2
C22	B	97	2	8E	2
C23	B	56	3	4E	2
C24	B	14	20	1C	2
C25	B	122	15	3A	1
C26	B	108	35	3D	1
C27	B	108	29	3D	1
C28	B	77	17	5D	2
C29	B	89	24	6D	2
C30	B	72	10	4E	2
C31	B	72	30	5E	2
C32	B	58	30	6E	2
C33	B	86	10	6E	2
C34	B	86	30	7E	2
C35	B	99	10	8E	2
C36	B	59	10	4E	2
D1	B	24	20	1E	2
D1	B	24	20	2A	2
D2	B	50	1	1E	2
D2	B	50	1	3C	2
D3	B	65	14	1F	2
D3	B	65	14	5C	2
D4	B	50	30	2E	2
D4	B	50	30	4D	2
D4	B	50	30	7D	2
D6	B	73	18	1F	2
D6	B	73	18	6B	2
D6	B	73	18	6B	2
D6	B	73	18	6C	2
D6	B	73	18	6C	2
D6	B	73	18	6C	2
D6	B	73	18	6D	2
D7	B	85	16	2F	2
D7	B	85	16	5D	2
D7	B	85	16	6D	2
D8	B	100	14	2D	2
D8	B	100	14	2D	2
D8	B	100	14	2F	2
D8	B	100	14	4E	2
D8	B	100	14	5E	2
D9	B	131	8	2A	1
D9	B	131	8	2A	1
D9	B	131	8	2B	1
D9	B	131	8	2B	1
D9	B	131	8	2D	1
D10	B	64	2	4B	2
D10	B	64	2	4E	2
D10	B	64	2	6B	2
D11	B	77	2	4B	2
D11	B	77	2	4E	2
D11	B	77	2	7B	2
D12	B	77	34	5B	2
D12	B	77	34	5E	2
D12	B	77	34	7B	2
D13	B	64	34	5B	2
D13	B	64	34	6E	2
D13	B	64	34	7B	2
D14	B	91	2	5B	2
D14	B	91	2	7B	2
D14	B	91	2	7E	2
D15	B	91	34	5B	2
D15	B	91	34	7B	2
D15	B	91	34	7E	2
D16	B	104	2	8C	2
D16	B	104	2	8D	2
D16	B	104	2	8E	2
D17	B	48	15	3E	2
D17	B	48	15	4B	2
N1	B	123	20	3A	1
N1	B	123	20	3B	1
N1	B	123	20	3D	1
R1	B	126	27	3B	1
R2	B	115	15	3B	1
R3	B	112	31	2D	1
R4	B	103	24	2D	1
R5	B	120	29	4C	1
R6	B	126	5	2B	1
R7	B	130	5	1B	1
R8	B	52	20	3B	2
R9	B	108	13	1B	1
R10	B	31	35	2B	2
R11	B	38	35	3B	2
R12	B	35	32	3B	2
R13	B	41	37	3B	2
R14	B	35	35	3B	2
R15	B	36	32	3B	2
R16	B	36	35	3B	2
R17	B	38	32	3B	2
R18	B	33	35	3D	2
R22	B	41	3	2C	2
R23	B	24	9	2A	2
R24	B	22	9	2A	2
R25	B	31	8	2A	2
R26	B	33	8	2A	2
R27	B	34	8	2A	2
R28	B	36	8	2A	2
R29	B	37	8	2A	2
R30	B	69	13	5B	2
R31	B	89	19	5D	2
R32	B	76	24	6D	2
R33	B	21	9	1A	2
R37	B	52	18	5C	2
R38	B	131	21	3B	1
R39	B	128	23	3A	1
R40	B	115	27	3C	1
R41	B	134	10	2B	1
R43	B	134	16	2A	1
R44	B	115	21	3C	1
R45	B	127	25	3A	1
R46	B	76	16	4D	2
R47	B	89	26	6D	2
R48	B	111	30	2C	1
R49	B	102	22	2D	1
R50	B	110	22	1C	1
R51	B	106	16	1D	1
R52	B	49	27	7D	2
R53	B	95	25	1D	2
V1	B	105	20	2D	1
V2	B	110	27	2D	1
V3	B	108	24	2D	1
V4	B	110	33	2C	1
V5	B	119	27	4C	1
V7	B	124	2	1B	1
V8	B	107	2	1C	1
V9	B	122	18	4A	1
V11	B	134	12	2A	1
V13	B	128	5	1B	1
V14	B	110	2	1C	1
X11	A	14	6	4A	2
X12	A	14	33	6A	2
X13	A	28	6	4A	2
X14	A	28	33	7A	2
X15	A	41	6	5A	2
X16	A	41	33	7A	2
X17	A	55	6	5A	2
X18	A	55	33	7A	2
X19	A	68	6	5A	2
X20	B	117	10	1A	1
X50	B	53	29	3D	1
X60	B	102	15	3D	1
X80	B	99	29	2D	2
X110	A	68	33	7A	2
X111	A	82	6	5A	2
X112	A	82	33	7A	2
X113	A	122	6	8A	2
X114	A	122	33	8A	2
X115	A	95	6	8A	2
X116	A	95	33	8A	2
X150	B	8	11	1B	2

ROHDE & SCHWARZ

Benennung: EE EICHLEITUNGSSTEUERUNG
Designation: ATTENUATOR CONTROL

Sprache: *Lang.:* de

Blatt: *Sh.:* 1 –

Ael: *C.I.:* 04.00

Typ: *Type:* SME

Datum: *Date:* 99–09–02

Abteilung: *Dpt:* 1GPK

Name: *Name:* SR

Sachnr.: *Part No.:* **1038.6960.01 XY**

ROHDE&SCHWARZ

SERVICE DOCUMENTS

Module NOISE GENERATOR AND DISTORTION SIMULATOR

1104.9080.02

Contents

7. Testing and Repair of the Module

7.1 Function Description

The module "Noise Generator and Distortion Simulator (Option SMIQB17, NDSIM for short) can optionally be connected into the complex modulation signal (I and Q) path of the SMIQ. Depending on the configuration and the operating mode, the modulation signal may be derived from the modulation coder module (Option SMIQB10, MCOD for short), from an external source or from the fading simulator module (Option SMIQB14, FSIM for short). With the NDSIM switched on, the analog input signal is converted into a digital one (AD converter), purely digitally influenced according to the noise or distortion selected and finally converted into a complex analog signal again by DA converters. The complex output signal (I and Q) is routed to the IQ modulator (IQMOD module) and to the AUX connector at the rear panel.

7.2 Servicing Concept

The module is a complex hybrid circuit with a prevailing digital section. Therefore, exact fault diagnosis at the component level or repair is not possible at the subsidiaries or at the customer's. A module found to be defective must be replaced by a spare module. Leave the defective module at the production for exact diagnosis and error elimination.

The same applies to the adjustment.

This document is therefore designed to enable the service engineer to clearly identify a defective or incorrectly adjusted module.

7.3 Measuring Equipment and Accessories

- Spectrum analyzer, frequency range e.g. FSA, FSE
- Signal generator (100 kHz to 5 MHz) e.g. ADS
- DC voltage source (50-ohm load) e.g. ADS
- DC voltmeter (50-ohm load) e.g. URE

7.4 Troubleshooting

If the NDSIM does not work properly, call up the selftest first.

- Settings: **UTILITIES :TEST :TEST NDSIM**

7.4.1 Loading the FPGAs after Switch-on

After switch-on, the three FPGAs on the module are loaded via the serbus interface by the COMPUTER module. If loading was not successful, this is indicated by the volatile error message "**ERROR 420 NDSIM FPGA loading failed**", which will then entered into the static "Error Page".

7.4.2 Selftest

The complete selftest is composed of several parts, which are executed one after the other. If a fault occurs in one of these steps, the remaining selftest will no longer be carried out, since each step assumes that there have not been any faults in the preceding steps (e.g. it does not make sense to initiate the NDSIM-internal selftest unless all supply voltage could be measured correctly).

7.4.2.1 Testing the Supply Voltages

Part of the supply voltages of the NDSIM are applied externally (via filter sections), part of them can be derived from these external voltages on the module. The voltages can be connected via the diagnostic multiplexer (D47) to the DIAG 5V bus (X600.A19). Using the diagnostic AD converter of the SMIQ, the voltages are checked by the host computer (A3, FRO).

The following voltages are remeasured:

Designation	Permissible range	Test point
3.3 V Voltage supply FPGAs and RAMs	3.15 V <= U <= 3.45 V	TP 2700
3.3V2 Voltage supply FPGAs und RAMs	3.15 V <= U <= 3.45 V	TP 2704
5VD Voltage supply Digital section	4.96 V <= U <= 5.44 V	TP 2703

7.4.2.2 RAM Address Test

This test serves to detect faults in the addressing of the RAMs (short-circuits between address pins, address pins that are not soldered).

The test is carried out as follows:

1) The memory cell with address "0000hex" is assigned the pattern "55...55hex".
2) "AA...AAhex" is written to all memory cells with the address "0001hex", "0002hex", "0004hex" to "8000hex".
3) Then the memory cell with the address "0000hex" is read out again. If there is no fault in addressing, its contents must be unchanged.
4) Test steps 1) to 3) are repeated for the addresses "0001hex", "0002hex", "0004hex" to "8000hex" (Walking One Address) in the same way.

7.4.2.3 ADC Inputs of the DISTO1-FPGA (D5)

This test checks whether all ADC inputs of the DISTO1-FPGA are correctly soldered. A static digital signal is applied via SHIFT REGISTER1 (D21, D22, D23) via serbus to the inputs of the FPGA and read in the FPGA. The test is repeated 12 times as "Walking-One-Test", i.e. each of the 12 data lines of each channel is set to "1" once.

7.4.2.4 DAC Outputs of the NOISE-FPGA (D40)

This test checks whether all DAC outputs of the NOISE-FPGA are correctly soldered. A static signal is applied to the outputs with the DAC compensation in the NOISE-FPGA and read with the SHIFT-REGISTER2 (D34, D35, D36, D39) via serbus. The test is repeated 12 times as "Walking-One-Test", i.e. each of the 12 bits of the DAC compensation is set to "1" once.

7.4.2.5 Testing the Shorting Path

In order to test the shorting path of the module, a DC voltage is connected from the module MCOD to the inputs I_MODIN or Q_MODIN. This voltage is tapped at the module outputs I_MODOUT or Q_MODOUT with the aid of the diagnostic multiplexer and taken via the DIAG-5V line to the diagnostic AD converter of the SMIQ for measurement.

7.4.2.6 Testing the Signal Path Inputs

A DC voltage is applied from the module MCOD to the inputs I_MODIN and Q_MODIN. The relays are switched to normal mode on the NDSIM. The AD converters are read out via the Disto1-FPGA and checked.

7.4.2.7 Testing the Signal Path Outputs

In this test, the relays are switched to normal mode. An FPGA-internal test generator provides a constant signal, which is taken via the bridged distortion simulator to the DACs. The noise generator is switched off.

These output voltages of the DACs are tapped at the module outputs I_MODOUT or Q_MODOUT with the aid of the diagnostic multiplexer and taken via the DIAG-5V line to the diagnostic AD converter of the SMIQ for measurement.

7.4.2.8 ADC/DAC Loop Back Test

The FPGA-internal test generator provides a constant signal, which is taken via the distortion simulator to the DAC. The noise generator is switched off. As with the DAC offset compensation, the relays are switched to the feedback path so that the static signal is taken from the test generator via DAC and ADC to the DC calculation in the Distortion1-FPGA.

7.4.2.9 DC Offset Compensation

After the above tests have been performed successfully, the DC offset compensation is finally called up. It can as well be called up individually via the menu. For more details see section 7.5.4.

7.4.2.10 Error Messages of the Selftest

After the selftest has been started, the individual tests are called up one after the other. If a fault occurs, an error message ("NDSIM Error Code", see table below) is output and the selftest is aborted.

Test	NDSIM Error Code
Testing the supply voltages	
3.3V FPGA	Power TP 2700
3.3V FPGA	Power TP 2704
5.0V supply digital section	Power TP 2703
Writing & reading of the RAMs	
StützSteig RAM	Ram: St_St
Mult RAM	Ram: Mult
Noise RAM	Ram: Noise
ADC input	ADC in
DAC output	DAC out
Shorting path	
Iout	Bypass Iout
Qout	Bypass Qout
Signal path inputs	
Iout	Signal Iin
Qout	Signal Qin
Signal path outputs	
Iout	Signal Iout
Qout	Signal Qout
ADC/DAC Loop Back	Loop Back

The NDSIM error code is indicated as volatile display in the status line. In addition, the following static entry is made on the "Error Page":
ERROR -330 Selftest failed: NDSIM;

7.4.3 Additional Tests

Imbalances in terms of attenuation and group delay of the input and output filters between I and Q path result in a poor suppression of the image spectrum. The image spectrum is located at the same carrier spacing as the useful spectrum, but on the other side.

An excessive offset voltage leads to an excessive residual carrier.

- Settings: **Press the PRESET key**
  VECTOR MOD :STATE :ON
  NOISE/DIST :SELECT CHARACTERISTIC :TEST
  :DISTORTION :ON

- Connect the spectrum analyzer to the output AUX IN/OUT I_FADED at the rear.

- Connect the signal generator to the I-input at the front.

- Measure the frequency response from 100 kHz to 5 MHz (500-kHz steps).

Error description	Error elimination
If the module FSIM (SMIQ-B14) is not installed: **Frequency response > 0.6 dB** **(cable: 0.2 dB, filter: 0.4 dB)** **If the module FSIM (SMIQ-B14) is installed:** **Frequency response > 0.7 dB** **(FSIM: 0.1 dB)**	The adjustment of the frequency response of the input or output filters was changed. Readjust the NDSIM.

- Connect DC voltage source to the I or Q input at the front and apply +0.5 V +- 1 mV and
  -0.5 V +- 1 mV one after the other.

- Connect DC voltmeter (50-ohm load) to the output AUX IN/OUT I_FADED or Q_FADED at the rear and measure voltage difference from + 0.5 V to - 0.5 V (offset is not considered in the measurement.)

Error description	Error elimination
If the module FSIM (SMIQ-B14) is not installed: **Voltage difference < 965 mV** **Voltage difference > 1005 mV** **Difference between I and Q channel > 15 mV** **If the module FSIM (SMIQ-B14) is installed:** **Voltage difference < 950 mV** **Voltage difference > 990 mV** **Difference between I and Q channel > 15 mV**	The DC adjustment of the input or output filters was changed. Readjust the NDSIM.

- Use **UTILITIES : CALIB: NDSIM** to call the automatic offset compensation.

- Terminate the I and Q input with 50 ohms.
- Use DC voltmeter (50-ohm load) to measure the offset voltage at output AUX IN/OUT I_FADED and Q_FADED.

Error description	Error elimination
Offset voltage > 2 mV	Automatic offset compensation defective. Repair the NDSIM.

The following troubleshooting procedure assumes that the MCOD module (SMIQ-B10) is installed and works properly. Besides, the modules IQMOD and IQCON must function properly and data integrity must be ensured.

- Connect spectrum analyzer to RF output.

- Settings: **Press PRESET key**
  DIG.MOD :STATE :ON
  :SOURCE :SOURCE :PATTERN
  :SYMBOL RATE :800 000.0 sym/s
  NOISE/DIST :SELECT CHARACTERISTIC :TEST
  :DISTORTION :ON

Error description	Error elimination
Image spectrum 100 kHz below the carrier frequency is attenuated with less than 40 dB. However, an attenuation is clearly visible.	Perform above frequency response and DC measurements and readjust or repair the NDSIM, if required.
Image spectrum 100 kHz below the carrier frequency is not attenuated.	I or Q signal path open. Repair the NDSIM.
Intermodulation products 200 kHz and 300 kHz below and above the carrier frequency are attenuated with less than 55 dB.	Amplifier or converter overdriven or defective. Perform above frequency response and DC measurements and readjust or repair the NDSIM, if required.

7.5 Testing and Adjustment

As already explained under "7.2 Servicing Concept", defective modules are to be sent to the production department for repair and adjustment.

7.5.1 Revision

UTILITIES :DIAG :CONF serves to indicate the revision and the version of the individual modules. The revision (REV) is coded with resistors R469 to R472, the version (VAR) with resistors R204, R467 and R468.

7.5.2 Jumpers

See also the label "JUMPER SETTING" on the screening cover.

Connect X2.2 with X2.3
Connect X3.3 with X3.4
Connect X4.3 with X4.4
Connect X5.2 with X5.3
Connect X8.1 with X8.2
Connect X9.1 with X9.2
Connect X13.1 with X13.2
Connect X15.1 with X15.2
Connect X16.1 with X16.2

7.5.3 Diagnostic Points

- Settings: **UTILITIES :DIAG :TPOINT :STATE ON**
  :TEST POINT xxxx

Test point	Description
TP 2700	3.3 V voltage supply, 3.15 V to 3.45 V
TP 2704	3.3V2 voltage supply, 3.15 V to 3.45 V
TP 2703	5VD voltage supply, 4.96 V to 5.44 V
TP 2701	I_OUT_T, I output signal at X603 and X604
TP 2702	Q_OUT_T, Q output signal at X605 and X606
TP 2705	Ground potential

7.5.4 DC Offset Compensation

UTILITIES :CALIB :NDSIM or **NOISE/DIST :CALIBRATION** permits to call up the automatic DC compensation, which is also part of the internal selftest.

7.5.4.1 ADC Offset Compensation

For the ADC offset compensation, the relays 1, 2, 4 and 7 are switched to a 50-ohm resistor. The voltage offset produced in the AD converter and input lowpass is determined for I and Q channel in the Disto1-FPGA (D5) and read by the computer module. The values read are rounded by the host, inverted and written to the Disto1-FPGA.

7.5.4.2 DAC Offset Compensation

For the DAC offset compensation, the relays 1, 2, 4 and 7 are switched to the feedback path. The output of the Noise-FPGA (D40) is switched to "10...0bin" so that the DA converter provides a 0-V output voltage. The voltage offset produced in the DA converter and output lowpass is determined for I and Q channel in the Disto1-FPGA and read by the computer module. The values read are inverted by the host, scaled and written to the noise-FPGA.

7.5.4.3 Error Messages of Offset Compensation

The following volatile error messages may occur:
ERROR 180 NDSIM calibration error; ADC offset calibration
ERROR 180 NDSIM calibration error; ADC offset > 64
ERROR 180 NDSIM calibration error; DAC offset calibration
ERROR 180 NDSIM calibration error; DAC offset > 64

In addition, the following static error message is entered into the error page:
ERROR 180 Calibration failed: NDSIM

If the SMIQ is switched on with the Preset key depressed, the calibration data are deleted and the following static error message is entered into the error page:
ERROR -313 Calibration memory lost; NDSIM-run internal calibration

This message is extinguished with the next successful calibration.

7.6 Disassembly and Assembly

After opening the instrument and loosening the mechanical lock on the motherboard, pull off the six coax connections on the module. The module can then be removed from its slot. Loosen screws and remove screening cover. For assembling and replacing the module proceed in the reverse order.

7.7 External Interfaces

7.7.1 Interface to Motherboard

Pin	Name	Input/output	Origin/ destination	Value range	Signal description
X600.A1					
X600.A2					
X600.A3					
X600.A4					
X600.A5					
X600.A6					
X600.A7					
X600.A8					
X600.A9					
X600.A10					
X600.A11	GND		A200, MBIQ		Ground
X600.A12	SERBUS-CLK	Input	A3, FRO, X31.40	HCT level	Serbus Clock
X600.A13	GND		A200, MBIQ		Ground
X600.A14	SERBUS-OUT	Output	A3, FRO, X31.39	HCT level	Serbus data
X600.A15	SERBUS-IN	Input	A3, FRO, X31.39	HCT level	Serbus data
X600.A16	SERBUS-SYNC	Input	A3, FRO, X31.37	HCT level	Serbus Sync
X600.A17	SERBUS-INT	Output	A3, FRO, X31.38	HCT level	Serbus Interrupt
X600.A18	Reset-P	Input	A3, FRO, X31.28	HCT level	Serbus Reset
X600.A19	DIAG-5V	Output	A3, FRO, X31.44	-5 V to +5 V	Diagnosis
X600.A20					
X600.A21	GND		A200, MBIQ		Ground
X600.A22					
X600.A23	GND		A200, MBIQ		Ground
X600.A24	VA15-P	Input	A2, POWS1	14.7 to 15.9 V max. 550 mA	15 Volt Current supply
X600.A25	GND		A200, MBIQ		Ground
X600.A26	VA7.5-P	Input	A2, POWS1	7.4 to 8.0 V max. 350 mA	7.5 V Current supply
X600.A27	GND		A200, MBIQ		Masse
X600.A28	VD5-P	Input	A2, POWS1	5.1 to 5.3 V max. 550 mA	5 V Digital Current supply
X600.A29	GND		A200, MBIQ		Ground
X600.A30	VA15-N	Input	A2, POWS1	-15.9 to -14.7 V max. 200 mA	-15 V Current supply
X600.A31	GND		A200, MBIQ		Ground
X600.A32	VD5-N	Input	A200, MBIQ	-5.3 to -5.1 V max. 350 mA	-5.2 V Current supply

Pin	Name	Input/output	Origin/ destination	Value range	Signal description
X600.B1	EXT_CLB	Eingang	--------	40 MHz, TTL level	Master Clock test output
X600.B2	GND		A200, MBIQ		Ground
X600.B3					
X600.B4					
X600.B5					
X600.B6					
X600.B7					
X600.B8					
X600.B9					
X600.B10					
X600.B11	GND		A200, MBIQ		Ground
X600.B12					
X600.B13	GND		A200, MBIQ		Ground
X600.B14					
X600.B15					
X600.B16					
X600.B17					
X600.B18					
X600.B19					
X600.B20					
X600.B21	GND		A200, MBIQ		Ground
X600.B22					
X600.B23	GND		A200, MBIQ		Ground
X600.B24	VA15-P	Input	A2, POWS1	14.7 to 15.9 V Current see X600.A24	15 Volt Current supply
X600.B25	GND		A200, MBIQ		Ground
X600.B26	VA7.5-P	Input	A2, POWS1	7.4 to 8.0 V Current see X600.A26	7.5 V Current supply
X600.B27	GND		A200, MBIQ		Ground
X600.B28	VD5-P	Input	A2, POWS1	5.1 to 5.3 V Current see X600.A28	5 V Digital Current supply
X600.B29	VD5-P	Input	A2, POWS1	5.1 to 5.3 V Current see X600.A28	5 V Digital Current supply
X600.B30	VA15-N	Input	A2, POWS1	-15.9 to -14.7 V Current see X600.A30	-15 V Current supply
X600.B31	GND		A200, MBIQ		Ground
X600.B32	VD5-N	Input	A200, MBIQ	-5.3 to -5.1 V Current see X600.A32	-5.2 V Current supply

7.7.2 Coaxial Interfaces

Pin	Name	Input/output	Origin/ destination	Value range	Signal description
X601	I_MODIN	Input	without MCOD, FSIM: FRO, I socket with MCOD: A320, MCOD, X325 with FSIM: A360, FSIM, X367	max. 1 Vpp into 50 ohms, 0 to 8 MHz	I input signal (I component of modulation signal)
X602	Q_MODIN	Input	without MCOD, FSIM: FRO, Q socket with MCOD: A320, MCOD, X328 with FSIM: A360, FSIM, X370	max. 1 Vpp into 50 ohms, 0 to 8 MHz	Q input signal (Q compoenent of modulation signal)
X603	I_MODOUT	Output	A240, IQMOD, X244	max. 1 Vpp into 50 ohms, 0 to 8 MHz	I output signal (I component of modulation signal)
X604	I_NDSIM	Output	AUX IN/OUT I_FADED, X400	see X603	I output signal to rear panel
X605	Q_MODOUT	Output	A240, IQMOD, X245	max. 1 Vpp into 50 ohms, 0 to 8 MHz	Q output signal (Q component of modulation signal)
X606	Q_NDSIM	Output	AUX IN/OUT Q_FADED, X400	see X605	Q output signal to rear panel

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet

Part lists
in numerical order

Listes des pièces détachées
par numéros de référence

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
.	XX VARIANTENERKLAERUNG IDENTIFICATION OF MODELS				
C1	CC 22PF+-1% 50VNPO 0603	CC 0009.4609.00	MURATA	GRM39C0G***F50ZPT	
..4	SMD-CERAMIC-CAPACITOR				
C5	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C6	CC 27PF+-1% 50VNPO 0603	CC 0010.9323.00	MURATA	GRM39C0G***F50ZPT	
	SMD-CERAMIC-CAPACITOR				
C7	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C8	CC 27PF+-1% 50VNPO 0603	CC 0010.9323.00	MURATA	GRM39C0G***F50ZPT	
	SMD-CERAMIC-CAPACITOR				
C9	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C10	CC 10P+-0,1PF50V NPO 0603	CC 0009.4567.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C11	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C12	CC 10P+-0,1PF50V NPO 0603	CC 0009.4567.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C13	CC 1,0NF+-10%50V HDK 0603	CC 0009.4938.00	MURATA	GRM39X7R***K5C500PT*	
..16	SMD-CERAMIC-CAPACITOR				
C17	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C18	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C19	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C20	CC 10P+-0,1PF50V NPO 0603	CC 0009.4567.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C21	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C22	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C23	CC 10P+-0,1PF50V NPO 0603	CC 0009.4567.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C24	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C25	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C26	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C27	CC 10P+-0,1PF50V NPO 0603	CC 0009.4567.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C28	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C29	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C30	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C31	CC 10P+-0,1PF50V NPO 0603	CC 0009.4567.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C32	CC 8,2PF0,1PF50V NPO 0603	CC 0009.4550.00	MURATA	GRM39C0G***B50ZPT	
	SMD-CERAMIC-CAPACITOR				
C33	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C34	CC 56PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8809.00	MURATA	GRM42-6C0G 560F50ZPT	
C35	CC 56PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8809.00	MURATA	GRM42-6C0G 560F50ZPT	
C36	CC 68PF+-1% 50VNPO 0603	CC 0009.9746.00	MURATA	GRM39C0G***F50ZPT	
	SMD-CERAMIC-CAPACITOR				
C37	CC 68PF+-1% 50VNPO 0603	CC 0009.9746.00	MURATA	GRM39C0G***F50ZPT	
	SMD-CERAMIC-CAPACITOR				
C39	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C40	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C41	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C42	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C43	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C44	CC 100NF+-10%16V HDK 0603	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
..49	CERAMIC CHIP CAPACITOR				

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Designation	contained in
C50	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C51	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C52	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C53 ..59	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C60	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C61 ..72	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C73	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C74	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C75	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C76	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C77	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C78	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C79 ..82	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C83	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C84	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C85 ..90	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C91	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C92 ..98	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C99	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C100	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C101	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C102	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C103	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C104	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C105 ..108	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C109	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C110	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C111	CC 10NF+-10% 50VHDK 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4844.00	MURATA	GRM39X7R***K5C500PT*	
C112 ..114	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C115	CC 10NF+-10% 50VHDK 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4844.00	MURATA	GRM39X7R***K5C500PT*	
C116	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C117	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C118	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C119	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C120	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C121 ..123	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C124	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C125	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C126	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	Contained in
C128	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C129	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C133 ..135	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C136	CT 7P-30P 4,4X4 GN SMD CERAMIC CHIP TRIMMER	CT 0008.1235.00	PANASONIC	ECR-JA030E12	
C137 ..139	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C140	CT 7P-30P 4,4X4 GN SMD CERAMIC CHIP TRIMMER	CT 0008.1235.00	PANASONIC	ECR-JA030E12	
C141	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C142	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C143 ..149	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C150	CC 3,3PF 0,1PF 50V NPO 06 SMD-CERAMIC-CAPACITOR	CC 0009.8285.00	MURATA	GRM39COG***B50ZPT	
C151	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F50ZPT	
C152	CC 150PF+-1% 50V NPO 0603 MD-CERAMIC-CAPACITOR	CC 1051.4680.00	MURATA	GRM39COG***F50ZPT	
C153 ..157	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C165	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C172	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C173	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C174	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C176 ..178	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C179	CT 7P-30P 4,4X4 GN SMD CERAMIC CHIP TRIMMER	CT 0008.1235.00	PANASONIC	ECR-JA030E12	
C180 ..182	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C183	CT 7P-30P 4,4X4 GN SMD CERAMIC CHIP TRIMMER	CT 0008.1235.00	PANASONIC	ECR-JA030E12	
C184 ..190	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C191	CC 150PF+-1% 50V NPO 0603 MD-CERAMIC-CAPACITOR	CC 1051.4680.00	MURATA	GRM39COG***F50ZPT	
C192 ..206	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C207	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F50ZPT	
C208 ..213	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C214 ..216	CC 3,3PF 0,1PF 50V NPO 06 SMD-CERAMIC-CAPACITOR	CC 0009.8285.00	MURATA	GRM39COG***B50ZPT	
C217	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C218	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C219	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F50ZPT	
C220 ..222	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F50ZPT	
C223	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C224	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C225 ..230	CC 150PF+-1% 50V NPO 0603 MD-CERAMIC-CAPACITOR	CC 1051.4680.00	MURATA	GRM39COG***F50ZPT	
C231 ..233	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C234	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C235	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F50ZPT	
C236	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F50ZPT	
C237	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

Kennz. Comp. No.	Benennung Designation	Stock No.	Manufacturer	Designation	Contents in
C238	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6C0G 820F50ZPT	
C239	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6C0G 820F50ZPT	
C240	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C241	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C242 ..246	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C247	CC 10NF+-10% 50VHDK 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4844.00	MURATA	GRM39X7R***K5C500PT*	
C248 ..250	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C251 ..253	CC 47PF+-1% 50VNPO 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4644.00	MURATA	GRM39C0G***F50ZPT	
C254 ..257	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C258	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C259	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C260	CC 47PF+-1% 50VNPO 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4644.00	MURATA	GRM39C0G***F50ZPT	
C261	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6C0G 820F50ZPT	
C262 ..266	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C267	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6C0G 820F50ZPT	
C268	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C270 ..272	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C275 ..277	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C279	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C281	CC 10NF+-10% 50VHDK 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4844.00	MURATA	GRM39X7R***K5C500PT*	
C282	CC 10NF+-10% 50VHDK 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4844.00	MURATA	GRM39X7R***K5C500PT*	
C283	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C284 ..286	CC 10NF+-10% 50VHDK 0603 SMD-CERAMIC-CAPACITOR	CC 0009.4844.00	MURATA	GRM39X7R***K5C500PT*	
C287	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C317	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C318	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C320	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C327	CE 10UF+-20%35V 7343 TANTALUM CHIP CAPACITOR	1078.3291.00	SIEMENS	B45197-A6106-M40*	
C328	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C329	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C331	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
C332	CC 100NF+-10%16V HDK 0603 CERAMIC CHIP CAPACITOR	CC 1097.6292.00	AVX	CM105 X7R104K16AT	
D1 ..3	BL PC74HCT164T 8B.SH.REG. SHIFT REGISTER	BL 0007.6440.00	PHILIPS_SE	(PC)74HCT164(D/T)	
D4	BL 74AC245SC 8XBUSTRANSC IC OCTAL BUS-TRANSC 3-ST	BL 4039.4290.00	NSC	74AC245(SC)	
D5	BC XC4013XL-1 13K GAT LCA 13K LOGIC CELL ARRAY	1104.9197.00	XILINX	XC4013XL-1PQ208C	
D6	BL 74AC245SC 8XBUSTRANSC IC OCTAL BUS-TRANSC 3-ST	BL 4039.4290.00	NSC	74AC245(SC)	
D7	BL 74AC245SC 8XBUSTRANSC IC OCTAL BUS-TRANSC 3-ST	BL 4039.4290.00	NSC	74AC245(SC)	
D8 ..12	BC IS61LV6416-10T SRAM 3.3V STATIC RAM	BC 1104.9180.00	INTEGRATED	IS61LV6416-10T	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
D13	BJ HI5731BIB 1X12B-DAC D/A CONVERTER	1085.1890.00	HARRIS	HI5731BIB	
D14	BJ HI5731BIB 1X12B-DAC D/A CONVERTER	1085.1890.00	HARRIS	HI5731BIB	
D15	BC IS61LV6416-10T SRAM 3.3V STATIC RAM	BC 1104.9180.00	INTEGRATED	IS61LV6416-10T	
D16	BC IS61LV6416-10T SRAM 3.3V STATIC RAM	BC 1104.9180.00	INTEGRATED	IS61LV6416-10T	
D17	BJ AD9042AST 1X12B-ADC 12BIT 41MSPS AD-CONVERTER	1080.7578.00	ANALOG_DEV	AD9042AST	
D18	BJ AD9042AST 1X12B-ADC 12BIT 41MSPS AD-CONVERTER	1080.7578.00	ANALOG_DEV	AD9042AST	
D19	BC IS61LV6416-10T SRAM 3.3V STATIC RAM	BC 1104.9180.00	INTEGRATED	IS61LV6416-10T	
D20	BC XC4013XL-1 13K GAT LCA 13K LOGIC CELL ARRAY	1104.9197.00	XILINX	XC4013XL-1PQ208C	
D21 ..23	BL PC74HCT4094T 8ST.SHREG 8-STAGE SHIFT&STORE REG.	0007.6885.00	PHILIPS	(PC)74HCT4094(D)	
D25	BC IS61LV6416-10T SRAM 3.3V STATIC RAM	BC 1104.9180.00	INTEGRATED	IS61LV6416-10T	
D26	BC IS61LV6416-10T SRAM 3.3V STATIC RAM	BC 1104.9180.00	INTEGRATED	IS61LV6416-10T	
D27	BL 74LVC125ADB 4X3S BUFF. IC QUAD BUFFER	4052.5080.00	PHILIPS_SE	(74)LVC125A(DB)	
D28 ..30	BL 74ACT273 8X D-FF M.RES OCTAL D FLIP-FLOP	BL 1058.0745.00	HARRIS	(CD74)ACT273(M)	
D32	BL 74LVT00DB 4X2NAND 3.3V QUAD 2-IN NAND GATE	0048.3151.00	PHILIPS_SE	74LVT00DB	
D34 ..36	BL PC74HCT165T 8B SHREG SHIFT REGISTER	BL 0007.5408.00	PHILIPS_SE	(PC)74HCT165(D/T)	
D37	BC AM29F040 10% FL.EPROM FLASH-EPROM	BC 0009.6818.00	AMD	AM29F040B-120JC	
D39	BL PC74HCT165T 8B SHREG SHIFT REGISTER	BL 0007.5408.00	PHILIPS_SE	(PC)74HCT165(D/T)	
D40	BC XC4028XL-1 28K GAT LCA IC LOGIC CELL ARRAY	BC 1104.9216.00	XILINX	XC4028XL-1HQ208C	
D41 ..44	BL 74ACT574SC 8XD-FF 3S OCTAL D FLIP-FLOP 3ST	BL 0008.2225.00	HARRIS	CD74ACT574M	
D45	BL IDT49FCT805 CLK DRIV IC CLOCK DRIVER	BL 2058.6891.00	IDT	(IDT49)FCT805(SO)	
D47	BL PC74HCT4051T 8CH.A.MUX ANALOG MULTIPLEXER	0007.6827.00	PHILIPS	(PC)74HCT4051(T)	
D55	BL PC74HCT125T 4XBUFF. 3S QUAD LINE DRIVER	BL 0007.5395.00	PHILIPS_SE	(PC)74HCT125(D/T)	
D80	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	BG 0008.6143.00	THESYS	TH3032.1C	
D82	BL PC74HCT164T 8B.SH.REG. SHIFT REGISTER	BL 0007.6440.00	PHILIPS_SE	(PC)74HCT164(D/T)	
D87	BL 74ACT273 8X D-FF M.RES OCTAL D FLIP-FLOP	BL 1058.0745.00	HARRIS	(CD74)ACT273(M)	
D92	BL PC74HCT14T 6XINV.SCHM INV. SCHMITT-TRIGGER	BL 0007.6204.00	PHILIPS_SE	(PC)74HCT14(D/T)	
G2	EO 40,000MHZ QUARZOSZ QUARTZ CRYSTAL OSCILLATOR	1078.3133.00	SEIKO	SG 615 PH	
K1	SN GEPOLT 2XUM 5V MONOST. RELAY	1078.3262.00	MATSUSHITA	TQ2SA-5V(Z)	
K2	SN GEPOLT 2XUM 5V MONOST. RELAY	1078.3262.00	MATSUSHITA	TQ2SA-5V(Z)	
K4	SN GEPOLT 2XUM 5V MONOST. RELAY	1078.3262.00	MATSUSHITA	TQ2SA-5V(Z)	
K5	SN GEPOLT 2XUM 5V MONOST. RELAY	1078.3262.00	MATSUSHITA	TQ2SA-5V(Z)	
K7	SN GEPOLT 2XUM 5V MONOST. RELAY	1078.3262.00	MATSUSHITA	TQ2SA-5V(Z)	
K8	SN GEPOLT 2XUM 5V MONOST. RELAY	1078.3262.00	MATSUSHITA	TQ2SA-5V(Z)	
L1 ..4	LD 680NH 10% 0,14A 1210 RF CHOKE	LD 0690.9195.00	SIEMENS	B82422-A3681-J(K)100	
L5 ..8	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L9	LD 2,2UH 10% 0,27A 1210 RF CHOKE	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L10	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	

Komp. Nr. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Typ Designation	contained in
L11	LD 1,5UH 10% 0,34A 1210 RF CHOKE	LD 0009.5157.00	SIEMENS	B82422-A1152-J(K)100	
L12	LD 1,5UH 10% 0,34A 1210 RF CHOKE	LD 0009.5157.00	SIEMENS	B82422-A1152-J(K)100	
L13	LD 6UH 4A 0,017OHM CHOKE	LD 0026.4761.00	FASTRON_GE	SSSC-6ROM-00	
L14	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L15	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L16	LD 2,7UH 10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L17	LD 2,7UH 10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L18	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L19	LD 5,5UH Q110/5,5MHZ COIL	0374.7053.00	TOKO	P119ANS-A4342 AH	
L20 ..23	LD 2,7UH 10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L24	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L25	LD 2,7UH 10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L26	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L27	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L28	LD 2,7UH 10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L29 ..33	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L34	LD 2,2UH 10% 0,27A 1210 RF CHOKE	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L35	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L36	LD 1UH 10% 0,38A 1210 RF CHOKE	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L37	LD 5,5UH Q110/5,5MHZ COIL	0374.7053.00	TOKO	P119ANS-A4342 AH	
L38	LD 5,5UH Q110/5,5MHZ COIL	0374.7053.00	TOKO	P119ANS-A4342 AH	
L39	LD 2,2UH 10% 0,27A 1210 RF CHOKE	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L40 ..48	LD 5,5UH Q110/5,5MHZ COIL	0374.7053.00	TOKO	P119ANS-A4342 AH	
L49 ..52	LD SP-DROSSEL 15UH 2,45A CHOKE	1081.0283.00	SUMIDA	CDR125-150	
L53	LD 6,8UH 10% 0,13A 1210 RF CHOKE	LD 0009.5186.00	SIEMENS	B82422-A1682-J(K)100	
L54	LD 6,8UH 10% 0,13A 1210 RF CHOKE	LD 0009.5186.00	SIEMENS	B82422-A1682-J(K)100	
N1 ..4	BO AD9631AR VF OPAMP IC OPAMP	1085.1803.00	ANALOG_DEV	AD9631AR	
N5	BO REFO1CS 10V 20MA VREF VOLTAGE REFERENCE	1002.5129.00	PMI	REFO1C(S)	
N6 ..13	BO AD9631AR VF OPAMP IC OPAMP	1085.1803.00	ANALOG_DEV	AD9631AR	
N14	BV PT6203C DC/DC-CONV DC/DC-CONVERTER	BV 1085.1884.00	POWER_TREN	PT6203C	
N15 ..17	BO LT1124CS8 2X OPAMP IC OPAMP	1036.4483.00	LINEAR_TEC	(LT)1124(CS8)	
N18	BV PT6203C DC/DC-CONV DC/DC-CONVERTER	BV 1085.1884.00	POWER_TREN	PT6203C	
N19	BO OPO7CS8 OPAMP OPERATIONAL AMPLIFIER	0007.7781.00	LINEAR_TEC	LT1001(CS8)	
N23 ..25	BO OPO7CS8 OPAMP OPERATIONAL AMPLIFIER	0007.7781.00	LINEAR_TEC	LT1001(CS8)	
R1	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R2	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R3 ..7	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R8	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	

Comp. No.	Designation		Stock No.	Manufacturer	Designation	Substitute Nr.
R9	RG 47,5 OHM+-1%TK100 RESISTOR CHIP	1206	RG 0007.5566.00	ROEDERSTEI	D25	
R10	RG 10K +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R11	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R12	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R13	RG 10K +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
..24						
R25	RG 100R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
R26	RG 1K21 +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
R27	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R28	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R29	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R30	RG 909 OHM+-1%TK100 CHIP RESISTOR	1206	RG 0006.7265.00	PHILIPS_CO	RC02	
R31	RG 909 OHM+-1%TK100 CHIP RESISTOR	1206	RG 0006.7265.00	PHILIPS_CO	RC02	
R32	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
..34						
R35	RG 68R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6930.00	DRALORIC	CR 0603	
R36	RG 68R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6930.00	DRALORIC	CR 0603	
R37	RG 470R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6976.00	DRALORIC	CR 0603	
R38	RG 470R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6976.00	DRALORIC	CR 0603	
R39	RG 1KO +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R40	RG 121 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9498.00	DRALORIC	CR 0603	
R41	RG 1KO +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R42	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R43	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R44	RG 200 OHM+-1%TK100 RESISTOR CHIP	1206	RG 0007.5608.00	ROEDERSTEI	D25	
R45	RG 470R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6976.00	DRALORIC	CR 0603	
R46	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R47	RG 470R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6976.00	DRALORIC	CR 0603	
R48	RG 182 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9130.00	DRALORIC	CR 0603	
R49	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R50	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R51	RG 121 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9498.00	DRALORIC	CR 0603	
R52	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R53	RG 121 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9498.00	DRALORIC	CR 0603	
R54	RG 47R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6924.00	PHILIPS_CO	RC 22 H	
R55	RG 121 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9498.00	DRALORIC	CR 0603	
R56	RG 182 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9130.00	DRALORIC	CR 0603	
R57	RG 121 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9498.00	DRALORIC	CR 0603	
R58	RG 3R32 +-1% TK250 SMD RESISTOR EIA0603	0603	0010.8362.00	PHILIPS_CO	RC 22 H	
R59	RG 121 OHM+-1%TK100 SMD RESISTOR EIA0603	0603	0009.9498.00	DRALORIC	CR 0603	
R60	RG 47R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6924.00	PHILIPS_CO	RC 22 H	

Kennz. Comp. No.	Benennung Designation		Stock No.	Manufacturer	Designation	contained in
R61	RG 121 OHM+-1%TK100	0603	0009.9498.00	DRALORIC	CR 0603	
..65	SMD RESISTOR EIA0603					
R66	RG 1K21 +-1% TK100	0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R67	RG 4K75 +-1% TK100	1206	RG 0007.5820.00	PHILIPS_CO	RC02	
	RESISTOR CHIP					
R68	RG 619 OHM+-1%TK100	1206	RG 0006.9074.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R69	RG 619 OHM+-1%TK100	1206	RG 0006.9074.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R70	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R71	RG 10K +-1% TK100	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R72	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R73	RG 150R +-1% TK100	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R74	RG 10R +-1% TK100	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R75	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R76	RG 51,1 OHM+-1%TK100	1206	RG 0006.8810.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R77	RG 51,0 OHM+-1%TK100	0603	0009.9030.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R78	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R79	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R80	RG 51,1 OHM+-1%TK100	1206	RG 0006.8810.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R81	RG 51,0 OHM+-1%TK100	0603	0009.9030.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R82	RG 10R +-1% TK100	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R83	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R84	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R85	RG 3R32 +-1% TK250	0603	0010.8362.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R86	RG 270R +-1% TK100	0603	0010.9581.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R87	RG 1K21 +-1% TK100	0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R88	RG 270R +-1% TK100	0603	0010.9581.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R89	RS 0,25W100 OHM+-20%	SMD	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
	POTENTIOMETER					
R90	RG 10R +-1% TK100	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R91	RG 10R +-1% TK100	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R92	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R93	RG 100R +-1% TK100	0603	RG 0009.5334.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R94	RG 100 OHM+-0,1%TK25	1206	0009.8033.00	PHILIPS_CO	MPC 01	
..97	SMD-RESISTOR					
R98	RG 10K +-1% TK100	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R99	RG 10K +-1% TK100	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R100	RG 100 OHM+-0,1%TK25	1206	0009.8033.00	PHILIPS_CO	MPC 01	
	SMD-RESISTOR					
R101	RG 10K +-1% TK100	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R102	RG 10K +-1% TK100	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R103	RG 100 OHM+-0,1%TK25	1206	0009.8033.00	PHILIPS_CO	MPC 01	
..105	SMD-RESISTOR					
R106	RG 1K21 +-1% TK100	0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R107	RG 1K21 +-1% TK100	0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R108	RG 1,3 KOHM+-1%TK100	1206	RG 0007.5708.00	PHILIPS_CO	RC02	
	RESISTOR CHIP					

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R109	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R110	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R111	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R112	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R113	RG 1K21 +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
R114	RG 1K21 +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
R115	RG 22R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6901.00	DRALORIC	CR 0603	
R116	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R117	RG 1K21 +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
R118	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R119	RG 1K21 +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
R120	RG 1K21 +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0010.9817.00	PHILIPS_CO	RC 22 H	
R121 ..124	RG 15R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6899.00	DRALORIC	CR 0603	
R125	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R126	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R127	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R128 ..130	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R131	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R132	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R133	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R134	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R135	RG 22R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6901.00	DRALORIC	CR 0603	
R136	RG 68R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6930.00	DRALORIC	CR 0603	
R137 ..139	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R140	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R141	RG 22R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6901.00	DRALORIC	CR 0603	
R142	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R143	RG 0-OHM WIDERSTAND 1206 RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R144	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R145	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R146	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R147	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R148	RG 0-OHM WIDERSTAND 1206 RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R149	RG 182 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9130.00	DRALORIC	CR 0603	
R150	RG 68R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6930.00	DRALORIC	CR 0603	
R151	RG 90,9 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	1081.1773.00	PHILIPS_CO	RC 22 H	
R152	RG 90,9 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	1081.1773.00	PHILIPS_CO	RC 22 H	
R153 ..163	RG 182 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9130.00	DRALORIC	CR 0603	
R164	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	

Kennz. Comp. No.	Benennung Designation		Stock No.	Manufacturer	Designation	contained in
R165	RG 182 OHM+-1%TK100	0603	0009.9130.00	DRALORIC	CR 0603	
..176	SMD RESISTOR EIA0603					
R177	RG 51,0 OHM+-1%TK100	0603	0009.9030.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R178	RG 15R +-1% TK100	0603	0009.6899.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R179	RG 220R +-1% TK100	0603	0009.6953.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R180	RG 10R +-1% TK100	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R181	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R182	RG 1KO +-1% TK100	1206	RG 0006.7271.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R183	RG 1KO +-1% TK100	1206	RG 0006.7271.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R184	RG 51,0 OHM+-1%TK100	0603	0009.9030.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R185	RG 470R +-1% TK100	0603	0009.6976.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R186	RG 220R +-1% TK100	0603	0009.6953.00	DRALORIC	CR 0603	
..188	SMD RESISTOR EIA0603					
R189	RG 10R +-1% TK100	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R190	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
..193	SMD RESISTOR EIA0603					
R194	RG 22R +-1% TK100	0603	0009.6901.00	DRALORIC	CR 0603	
..203	SMD RESISTOR EIA0603					
R204	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R205	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R206	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R207	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R208	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R209	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R210	RG 270R +-1% TK100	0603	0010.9581.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R211	RG 270R +-1% TK100	0603	0010.9581.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R212	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
..218	SMD RESISTOR EIA0603					
R219	RG 0-OHM WIDERSTAND	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
	SMD RESISTOR EIA0603					
R220	RG 0-OHM WIDERSTAND	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
	SMD RESISTOR EIA0603					
R221	RG 470R +-1% TK100	0603	0009.6976.00	DRALORIC	CR 0603	
	SMD RESISTOR EIA0603					
R222	RG 1KO +-1% TK100	1206	RG 0006.7271.00	ROEDERSTEI	D25	
..225	CHIP RESISTOR					
R226	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R227	RG 100,0KOH+-1%TK100	1206	RG 0007.1948.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R228	RG 1KO +-1% TK100	1206	RG 0006.7271.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R229	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R230	RG 1KO +-1% TK100	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R231	RG 100,0KOH+-1%TK100	1206	RG 0007.1948.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R232	RG 0-OHM WIDERSTAND	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
	SMD RESISTOR EIA0603					
R233	RG 270R +-1% TK100	0603	0010.9581.00	PHILIPS_CO	RC 22 H	
	SMD RESISTOR EIA0603					
R234	RG 1,3KOHM+-0,1%TK25	1206	0010.1968.00	PHILIPS_CO	MPC 01	
	RESISTOR					
R235	RG 100 OHM+-0,1%TK25	1206	0009.8033.00	PHILIPS_CO	MPC 01	
	SMD-RESISTOR					
R236	RG 681 OHM+-1%TK100	1206	RG 0006.9080.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R237	RG 43,2 OHM+-1%TK100	1206	RG 0007.5550.00	DRALORIC	CR 1206	
	RESISTOR CHIP					

Comp. No.	Designation		Stock No.	Manufacturer	Designation	contained in
R238	RG 681 OHM+-1%TK100 CHIP RESISTOR	1206	RG 0006.9080.00	PHILIPS_CO	RC02	
R239	RG 100 OHM+-0,1%TK25 SMD-RESISTOR	1206	0009.8033.00	PHILIPS_CO	MPC 01	
R240	RG 1,3KOHM+-0,1%TK25 RESISTOR	1206	0010.1968.00	PHILIPS_CO	MPC 01	
R241	RG 43,2 OHM+-1%TK100 RESISTOR CHIP	1206	RG 0007.5550.00	DRALORIC	CR 1206	
R242	RG 470R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6976.00	DRALORIC	CR 0603	
R243	RG 470R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6976.00	DRALORIC	CR 0603	
R244	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R245	RG 270R +-1% TK100 SMD RESISTOR EIA0603	0603	0010.9581.00	PHILIPS_CO	RC 22 H	
R246	RG 274 OHM+-1%TK100 RESISTOR CHIP	1206	RG 0007.5637.00	ROEDERSTEI	D25	
R247	RG 274 OHM+-1%TK100 RESISTOR CHIP	1206	RG 0007.5637.00	ROEDERSTEI	D25	
R248 ..251	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R252 ..257	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R258	RG 10K +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R259	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R260 ..263	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R264	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R265	RG 150R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R266 ..269	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R270	RS 0,25W 20 OHM+-20% POTENTIOMETER	SMD	RS 0007.9561.00	BI_TECHNOL	23 B R... TR	
R271	RG 10R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R272	RS 0,25W100 OHM+-20% POTENTIOMETER	SMD	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R273 ..275	RG 10R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R276	RS 0,25W100 OHM+-20% POTENTIOMETER	SMD	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R277	RG 10R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R278	RG 10R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R279 ..285	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R286 ..289	RG 10K +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R290	RG 22R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6901.00	DRALORIC	CR 0603	
R291	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R292	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R293	RG 10R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R294	RG 10R +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R295	RS 0,25W 20 OHM+-20% POTENTIOMETER	SMD	RS 0007.9561.00	BI_TECHNOL	23 B R... TR	
R296	RG 7K5 +-1% TK100 SMD RESISTOR EIA0603	0603	0010.8440.00	PHILIPS_CO	RC 22 H	
R297 ..299	RG 1KO +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R300	RS 0,25W100 OHM+-20% POTENTIOMETER	SMD	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R301	RG 1KO +-1% TK100 SMD RESISTOR EIA0603	0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R302 ..304	RG 33R +-1% TK100 SMD RESISTOR EIA0603	0603	0009.6918.00	DRALORIC	CR 0603	
R305 ..307	RG 0-OHM WIDERSTAND SMD RESISTOR EIA0603	0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	

Kennz. Comp. No.	Benennung Designation	Stock No.	Manufacturer Designation	contained in
R308	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL 23 B R... TR	
R309	RG 121 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9498.00	DRALORIC CR 0603	
R310	RG 1K21 +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0010.9817.00	PHILIPS_CO RC 22 H	
R311	RG 2K2 +-1% TK100 0603 SMD RESISTOR EIA0603	0009.7008.00	PHILIPS_CO RC 22 H	
R312	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO RC 22 H	
R313 ..319	RG O-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO RC21 O OHM	
R320	RG 200 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5608.00	ROEDERSTEI D25	
R321	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R322	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R323 ..325	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R326 ..329	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI D25	
R330	RG 200 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5608.00	ROEDERSTEI D25	
R331	RG 200 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5608.00	ROEDERSTEI D25	
R375	RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI D25	
R376	RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI D25	
R377	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO RC 22 H	
R378	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R379	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R380	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI D25	
R381	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO RC 22 H	
R384	RG 182 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9130.00	DRALORIC CR 0603	
R389	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R399	RG 182 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9130.00	DRALORIC CR 0603	
R401	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO RC 22 H	
R402	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R404	RG 182 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9130.00	DRALORIC CR 0603	
R408	RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI D25	
R409 ..419	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI D25	
R434	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R435	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R436	RG 3R32 +-1% TK250 0603 SMD RESISTOR EIA0603	0010.8362.00	PHILIPS_CO RC 22 H	
R437 ..443	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R445	RG 3R32 +-1% TK250 0603 SMD RESISTOR EIA0603	0010.8362.00	PHILIPS_CO RC 22 H	
R446	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO RC 22 H	
R447	RG 680R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6982.00	PHILIPS_CO RC 22 H	
R448	RG 680R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6982.00	PHILIPS_CO RC 22 H	
R450	RG 680R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6982.00	PHILIPS_CO RC 22 H	
R451	RG 680R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6982.00	PHILIPS_CO RC 22 H	
R464	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL 23 B R... TR	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	Contents
R465	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R467	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R468	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R469	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R470	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R471	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R472	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R482	RG 15R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6899.00	DRALORIC	CR 0603	
R488	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R489 ..491	RG 10R +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5328.00	PHILIPS_CO	RC 22 H	
R493 ..496	RG 150R +-1% TK100 0603 SMD RESISTOR EIA0603	0009.6947.00	PHILIPS_CO	RC 22 H	
R497	RG 121 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9498.00	DRALORIC	CR 0603	
R498	RG 121 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9498.00	DRALORIC	CR 0603	
R499	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R503	RG 82,5 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9052.00	DRALORIC	CR 0603	
R504	RG 82,5 OHM+-1%TK100 0603 SMD RESISTOR EIA0603	0009.9052.00	DRALORIC	CR 0603	
R505	RG 825R +-1% TK100 0603 SMD RESISTOR EIA0603	0010.8391.00	PHILIPS_CO	RC 22 H	
R506	RG 825R +-1% TK100 0603 SMD RESISTOR EIA0603	0010.8391.00	PHILIPS_CO	RC 22 H	
R507	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R508	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R509	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
R510	RG 0-OHM WIDERSTAND 0603 SMD RESISTOR EIA0603	0009.9369.00	PHILIPS_CO	RC21 0 OHM	
S1	SK CODIERSCH..2P.2XEIN DIP-SWITCH	1081.0190.00	C&K	DMR-02-T(R)	
V3 ..6	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V9	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V10	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V11	AK BCP69-25 P 20V TRANS MEDIUM POWER TRANSISTOR	0008.2002.00	PHILIPS	BCP 69-16 (25)	
V12	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V13	AK BCP68-16 N 20V TRANS MEDIUM POWER TRANSISTOR	0008.2019.00	PHILIPS	BCP68-25	
V14	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V15	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V16 ..18	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V19	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V20	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
W1	DW RF CABLE W1	1104.9116.00			
W2	DW KABEL W2	1104.9122.00			
X1	FP E-PRESS STIFTLEISTE 2P CONNECTOR	0048.4706.00			
X2 ..5	FP E-PRESS STIFTLEISTE 4P CONNECTOR	0048.4729.00			

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	contained in
X6	FP E-PRESS STIFTLEISTE 2P CONNECTOR	0048.4706.00			
X7	FP E-PRESS STIFTLEISTE 4P CONNECTOR	0048.4729.00			
X8	FP E-PRESS STIFTLEISTE 3P CONNECTOR	0048.4712.00			
X9	FP E-PRESS STIFTLEISTE 3P CONNECTOR	0048.4712.00			
X10	FP E-PRESS STIFTLEISTE 4P CONNECTOR	0048.4729.00			
X11	FP E-PRESS STIFTLEISTE 2P CONNECTOR	0048.4706.00			
X12	FP E-PRESS STIFTL.10P. 2R CONNECTOR	0048.4970.00			
X13	FP E-PRESS STIFTLEISTE 3P CONNECTOR	0048.4712.00			
X14	FP E-PRESS STIFTLEISTE 2P CONNECTOR	0048.4706.00			
X15	FP E-PRESS STIFTLEISTE 3P CONNECTOR	0048.4712.00			
X16	FP E-PRESS STIFTLEISTE 3P CONNECTOR	0048.4712.00			
X600	FP STECKERLEISTE 64P. CONNECTOR 64P.	FP 0008.5747.00	DEUT_ELCO	16 8457 064 002 025	
X601 ..606	FJ EINLOETBUCHSE MMCX CONNECTOR	1085.1532.00	SUHNER	82MMCXS50-0-2/111KG	
Z1 ..35	LD T-FILTER 3,3NF SMD SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z36 ..41	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z42	LD T-FILTER 3,3NF SMD SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z43	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z54 ..57	LD T-FILTER 3,3NF SMD SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	

Power Supply Unit IN 1039.1504.00

This module is a subsupplied part. Thus the documentation does not contain the usual R&S identifications. In the case of complaint, we recommend to replace it by a new module or an exchange module.

Order designation:	New part:	IN 1039.1504.00
	Exchange part:	IN 1039.1504.98

Documents of the manufacturer are attached to our documentation. These documents (1039.1304) are valid for power supply unit IN 1039.1504.00.

Repair work at the module may only be executed by trained staff, observing the safety standards applying to works at electronic circuits.

In order to avoid the destruction of ICs due to static charge, antistatic methods (ESD measures) always have to be observed.

In the case of repair down to component level, only original parts may be used. The use of non-original components or the inappropriate execution of repair work might violate safety provisions and lead to liability claims to be refused.

Modules can be obtained directly via the appropriate R&S representative or via Rohde & Schwarz, Zentralservice München.

Address:

Rohde & Schwarz GmbH & Co. KG
Zentralservice 3MSL
Mühldorfstr. 15
81614 München

Tel.: 0049-89-41 29 28 60
Fax.: 0049-89-41 29 33 06

1998-03-20

Contents

7. Checking and Repair of the Module

7.1. Function Description

7.1.1 Overview

The rectified, filtered AC supply voltage is down-converted to an intermediate voltage of approx. 140 V using a pulse controller. This intermediate voltage is subsequently chopped by a push-pull stage and applied to the main transformer T1, the secondary windings of which generate 7 out of 8 output voltages by means of series regulators and switching regulators. The standby voltage as well as the internal auxiliary voltages are derived from a separate transformer clocked on the primary side.
The instrument is automatically set to the AC supply voltage value (115/230 V). A filter for suppression of conducted interference is provided at the input. Reliable isolation is achieved by using transformers for power conversion and VDE optocouplers for signal conversion.
The outputs of the secondary circuit are protected against overload and overvoltage. Cooling of the instrument is provided by a thermostat-controlled fan, which achieves its maximum speed only at high ambient temperatures.

7.1.2 Auxiliary and Standby Circuit

The standby transformer is directly operated from the rectified AC supply voltage, i.e. it is in operation as long as the AC supply voltage is applied and the power switch is switched on. The transformer operates in a freely oscillating mode. The oscillations are generated by the components arranged around switching transistor V116 and standby transformer T2. The control is performed by operational amplifier N17 following rectification and filtering of the voltage UH1 from the secondary winding N4 of the standby transformer. UH1 is adjusted to 12.8 V.
The remaining two output windings of T2 are used to generate the internal auxiliary voltages UH4 (+12.8 V, primary) as well as UH3 (+30 V, secondary) by means of rectification and using small series regulators. The +12.8-V auxiliary voltage of the secondary winding is reduced to 12.0 V in a further series regulator (transistor V98), current-limited to approx. 1 A and output as standby voltage (output 6) at the 50-contact connector. In order to prevent the variable transistor from being overloaded in the case of current limiting, the output voltage is totally cut off for approx. 2 seconds in the case of overload.

7.1.3 Primary Power Unit

After the preliminary filter with L32 and C29, the AC supply voltage is taken via a power resistor R75 (for inrush current limiting) to rectifier V45 and is subsequently buffered in the electrolytic capacitors C31, C32, C23. A further filter with L2, C22, C33, L28 and C95 is connected between rectifier and electrolytic capacitors. The DC voltage is applied from the electrolytic capacitors to the pulse controller consisting of transistor V28, choke L1 and commutation diode V64. The switching frequency of the pulse controller of approx. 70 kHz is produced by means of comparator N15. The output voltage is proportional to the pulse duty factor of the signal applied to the switching transistor. The pulse duty factor is set by the main regulator via optocoupler U4 and current comparator N15 depending on the output power and input voltage. The maximum power of the pulse controller is determined by the highest possible pulse duty factor and lies at approx. 300 W. The resulting intermediate voltage (output voltage of the pulse controller) of approx. 140 V is chopped by means of a half-bridge and applied to the primary winding N1 of main transformer T1. Transistors V131, V132 of the bridge are also supplied with 70 kHz via control transformer T3. The main control loop described here is closed by regulator N18, which maintains the secondary voltage of winding N2/N3 of the main transformer UGR+16 at a constant voltage of 15.8 V. Using the optocoupler U2, the pulse controller is switched off in standby mode; the same is achieved by the signal WSP from the primary control in the case of undervoltage.

7.1.4 Primary Control

The primary control generates the sequence of functions when the power supply unit is switched on. After the AC supply voltage has been applied, the auxiliary voltage UH4 must first increase to approx. 10 V so that the further control is enabled by the auxiliary voltage monitoring circuit with transistors V22, V23. Then the AC supply voltage value is evaluated by comparator N1. If the AC supply voltage value has not yet reached the 230-V range after approx. 100 ms (R8, C6, C7 at N1), relay K1 switches in order to achieve doubling of the voltage by cascading the input electrolytic capacitors C31, C32. If the AC supply voltage reaches the 230-V range within 100 ms, N1 remains locked in. Thus, relay K1 remains dropped out, avoiding that the 155-V mode is selected again when the AC supply voltage fails, which would involve a high current inrush.
After the voltage at the input electrolytic capacitors has increased to 240 V, the undervoltage sensing circuit N2 activates a timer (N1, C4, R8, R9) which first short-circuits the resistor R75 for inrush current limiting via K2 and then enables the main transformer via the control signal WSP. The undervoltage sensing device N2 is provided with a hysteresis so that the main transformer is only disabled again when the rectified AC supply voltage has fallen below 160 V.

When the rectified AC supply voltage decreases, N2 informs the evaluation circuit for the ACFAIL signal in the secondary circuit via optocoupler U3.

7.1.5 Secondary Power Unit

The voltages provided by the primary power unit at the secondary windings of the main transformer are separately rectified and filtered. The windings N2/N3 deliver the high-end voltages UGR+16 for +15.3V, UGR+8 for +7.7V and UGR-16 for -15.3V. N4/N5 provides UGR+13 for +12 V, N6 provides the high-end voltage for -30 V and N7 UGR38 for the switching regulator of the 24.5/30 V. These voltages are all rectified and filtered before being applied to the subsequent regulators.
The voltages for the outputs +15.3 V, -15.3 V, +12 V and -30 V are subsequently stabilized by series regulators. Each series regulator consists of a power MOSFET as regulating element with shunt and associated comparator for monitoring the current limiting. The 5.2-V output voltage is regulated by a switching regulator from the UGR+16, the switching frequency of which is synchronized with that of the main transformer.
The output voltage 24.5 V/30 V is generated on a separate module by a freely oscillating switching regulator. The output voltage of this regulator can be set by external connection of the signal COD at the output connector of the power supply, the voltage divider of the variable operational amplifier N3 being switched over. COD open: 24.5 V, COD connected to GND: 30 V.

The output voltage 2 (7.7 V) is not regulated, since only low requirements are placed on stability.

7.1.6 Reference Voltages

All regulators are provided with a common reference voltage REF1 of +5.2 V, which is generated by means of the integrated voltage regulator N18 and adjusted using potentiometer R209. For the regulators of the negative output voltages, a reference with half the value, i.e. +2.6 V (REF3) is additionally obtained from REF1 by voltage division. The reference voltage of +4.94 V (REF5) required for monitoring the +5.2 V with respect to undervoltage is formed by N19 and adjusted by means of R223.

7.1.7 Current Limiting / Overvoltage Protection

The so-called IREG signal constitutes the core of current limiting and overvoltage protection. This signal directly acts on the main regulator, reducing or disabling the total output power of the power supply by increasing the level; this is not true for the standby voltage. The IREG signal combines the outputs of the individual current limitations and overvoltage detectors.

- Current limiting:
The regulators of the output voltages +5.2 V and 24.5/30 V are provided with an independent current limiting facility each that features a constant-current characteristic in the case of overload.
The response of the standby voltage to current limiting is described in the respective section.
The remaining outputs are separately monitored with respect to overcurrent. For this purpose, the voltage dropping across a shunt in the respective current path is compared with a reference voltage by a comparator. If the output current exceeds the predetermined value, the comparator is activated, applying the IREG signal to high potential and thus reducing the power of the main transformer.

- Overvoltage protection:
In order to avoid damage to the loads in the case of accidental short-circuits between the output voltages, the main transformer is deactivated in the case of overvoltage at the outputs.
To this end, the output voltages +7.7 V, +15.3 V, 24.5/30 V, -15.3 V and +12 V are each applied via zener diodes to a common load resistance R221 and grounded. Overvoltage at an output causes a current flow in the appropriate zener diode and thus a voltage drop across R221. As a result of this, comparator N16 switches the IREG signal to high, disabling the main transformer. See also hickup mode. The -30-V output is not monitored. In the case of overvoltage at 5.2 V, a thyristor is triggered, short-circuiting the output voltage.

In order to prevent rising of the output voltages in the case of internal faults, the secondary voltage UGR+16 of the main control loop is separately monitored by comparator N25 and the main transformer deactivated when 17 V are exceeded.

- Hickup mode:
In order to protect the internal circuit and the connected loads from high continuous load due to overcurrent/overvoltage, a timer N26 is started when the IREG signal responds, disabling the main transformer for a few seconds. Thus the output power is maintained at acceptable values on average in the case of continuous disturbance. See also 1.8 Secondary Logic.

7.1.8 Secondary Logic

- Standby switch:
The multiple RC connection at the input of STANDBY/ON, D2 permits to connect power switches and signal switches and is used for debouncing the switch. The switch position is signalled to the primary side via optocoupler U2 and directly acts on the main transformer and the fan.

- ACFAIL# and SYSRESET#:
The NAND gates consisting of D3 generate the signals ACFAIL# and SYSRESET#.

ACFAIL# goes logic high after switching on of the power supply as soon as the 5.2-V output voltage has achieved 4.94 V and the 15.3-V output voltage has increased to 14.5 V. On power failure, ACFAIL# is set to logic low by the primary control via optocoupler U3.
When the power supply unit is switched on, SYSRESET# is delayed by approx. 300 ms by the RC section R324, C108 compared with ACFAIL#. On power failure, SYSRESET# is set to logic low as soon as the 5.2-V voltage has decreased to 4.94 V.

- Hickup mode:
The hickup mode mentioned in connection with current limiting includes the following functions:
When the unit is switched on, the main transformer is first enabled by timer N26 via optocoupler U2. If the +15.3-V output voltage has not yet increased to 14.5 V after 2 seconds, the main transformer is disabled for 6 seconds and subsequently enabled again for a new cycle. In the case of current limiting or overvoltage, the +15.3-V output voltage collapses to values below 14.5 V, and the same process is released.

7.1.9 Miscellaneous

The NTC R248 controls the fan speed via V143 depending on the temperature inside the instrument. At temperatures below 50°C, the fan is operated with approx. 7 V, this voltage increases to maximally 10 V at temperatures up to 60° and then remains constant. Using the NTC R184, an overtemperature protection has been implemented that deactivates the main transformer at more than 75°C.

7.2 Measuring Instruments and Auxiliary Equipment

Variable isolating transformer with at least 500 VA,
Laboratory power supply with DC voltage output 0 to 40 V,
DC voltmeter (digital multimeter).

7.3 Troubleshooting

- Note:
Repair work on the open instrument may only be carried by trained personnel. An isolating transformer must be used for current supply. Note that the circuit includes live parts and that, due to charged electrolytic capacitors, the input section carries dangerous contact voltages for approx. another 2 minutes even after the current supply has been interrupted!

To facilitate troubleshooting, the output voltages of the power supply should be monitored using digital voltmeters. The description of the causes of faults in most cases indicates several possible faults of components which may be responsible for the respective error symptom. Check these components and replace, if necessary, using the types of components indicated in the part lists.

Fault: Input fuse is blown when AC supply voltage is applied.
Causes:
- Switching transistor V28 of pulse controller faulty,
- Free-running diode V64 faulty,
- Diode V63 faulty,
- Rectifier V45 faulty.

Fault: no output voltage, fan does not run.
Causes:
- Fusing resistor R211 faulty,
- Switching transistor V116 of standby transformer faulty.

Fault: Only standby voltage provided.
Causes:
- Open circuit in the lead from the standby switch,
- Open or short circuit in the signal path from the terminal of the standby switch via the debouncing circuit preceding D2, via optocoupler U2 to the pulse controller,
- Level of WSP signal in the pulse controller is 0 V: Fault in the primary logic,
- Level of IREG signal exceeds 0 V: Find the source, see fault output voltages in hickup mode.

Fault: output voltages in hickup mode.
Causes:
- Fault in current limiting or overvoltage protection circuit. All feeding comparators are decoupled from each other via diodes and can therefore be investigated separately. The comparators of the current limitation of the analog regulators are the main possible causes; they are listed in the following:

+15.3V : N22 pin 1,
+7.7V : N17 pin 1,
-30V : N21 pin 1,
-15.3V : N20 pin 7,
+12V : N14 pin 7,
Overvoltage: N16 pin 7.

- A faulty function of the current comparators may be due to an open circuit in the shunt or a faulty resistor in the voltage divider at the input of the comparator.
- A faulty function due to overvoltage sensing can be caused by a short circuit in the variable transistor or a faulty resistor in the regulator voltage divider.

Fault: Missing output voltage.
Causes:
- Open circuit in the winding of the transformer,
- Faulty rectifier diodes,
- Faulty series regulator transistors,
- Open circuit in shunt,
- Faulty resistor in regulator voltage divider.

7.4 Putting into Operation

The AC supply voltage is delivered via a variable transformer. Increase the voltage to 110 V, the instrument is activated. Use R209 to set the output voltage 1 to 5.20 V on the instrument without load connected. Use R223 to set the voltage at pin 1 of the 50-contact connector to 4.94 V. Increase the AC supply voltage to 230 V, instrument switches over to 230-V operation (switching of internal relay can be heard) and continues running. All output voltages must then be provided according to the description of the external interfaces. To check proper functioning of the overvoltage protection, an overvoltage is simulated from outside using a laboratory power supply with the instrument running. The involved voltages are +5.2 V, +7.7 V, +15.3 V, -15.3 V, +12 V and 24.5/30 V. For this purpose, apply a voltage that is approx. 25% above the rated value to the respective output, the power supply must shut down immediately.

7.5 Disassembly and Assembly

Disassembly:
Loosen 6 screws on the circumference of the cover, pull off the cover towards the rear.
Loosen 4 screws at the front of the instrument, remove the connector of the fan terminal and of the connection from the power terminal to the printed circuit board.
The major test points are then accessible.
Assembly:
Check that the printed circuit boards are properly insulated.
For the assembly, proceed in the reverse order.

7.6 External Interfaces via the 50-contact SUB-D Connector

PIN No.	Designation	Input/ Output	Remark
1	REF3	O	Internal reference 2.6V
17	STANDBY/ON	I	Activating input LOW (GND) = NT on
33	SYSRESET#	O	System reset, HCT level
50	ACFAIL#	O	NMI Interrupt, HCT level
16	COD	I	24.5/30V switchover, open: 24.5V, Connection to GND: 30V
32	-	-	vacant
49	TSENSE	A	Temperature sensor output 100kohm NTC against GND
31	+12V STANDBY	O	11.65 .. 12.35VDC / 0.4A
48	-30V	O	-31 .. -29VDC / 0.1A
15	GND	-	Ground of power supply
30, 47	+12V	O	11.65 .. 12.35VDC / 2A
13, 14	GND	-	Ground of power supply
12, 28	-15.3V	A	-15.75 .. -14.85VDC / 2.6A
29, 46	GND	-	Ground of power supply
7, 8, 9, 24, 25, 41, 42	+5.2V	A	5.15 .. 5.25VDC / 10A
10, 11, 26, 27, 43, 44, 45	GND	-	Ground of power supply
5, 22, 39	+7.7V	A	7.45 .. 7.95VDC / 3.5A
6, 23, 40	GND	-	Ground of power supply
3, 19, 36, 37	+15.3V	A	14.85 .. 15.75VDC / 5.2A
4, 20, 21, 38	GND	-	Ground of power supply
18	24.5/30V	A	23.75 .. 25.25VDC / 0.6A, or 29 .. 31VDC / 0.5A
2	GND	-	Ground of power supply
34,35	-	-	Test pins, not connected

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet

Part lists
in numerical order

Listes des pièces détachées
par numéros de référence

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.21*.00-01	C	6	CE-120U/16V-64	E5_v	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.21*.00-01	C	7	CK-47P/1000V-70	E2_v	KERKO 47P 1000V 10% RAU	ROEDERSTEIN	CERAMIC DISC CAPACITOR RAU470KBACRA(RC,LA,LC)K OR RAU470KBACFOK
AP-238.21*.00-01	C	8	CF-1N/250V-62	D3_v	FOKO 1N 250V 20% FKS2	WIMA	POLYESTER FILM CAPACITOR FKS2 1N· 250VDC/160VAC 20% TAPED
AP-238.21*.00-01	C	9	CE-120U/16V-64	E3_v	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.21*.00-01	C	10	CK-470P/1000V-R8	E2_v	KERKO 470P 1000V 20% RAZ	ROEDERSTEIN	CERAMIC DISC CAPACITOR RAZ471MBACRA(RC,LA,LC)K OR RAZ471MBACFOK
AP-238.21*.00-01	C	11	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.21*.00-01	C	13	CF-1N/100V-33	E4_v	FOKO 1N 100V 2.5% KP1830	ROEDERSTEIN	POLYPROPYLENE FILM CAPACITOR KP 1830 2.5% - 210/01 3 W
AP-238.21*.00-01	C	16	CE-120U/16V-64	E4_v	ELKO 120U 16V 6.6X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.21*.00-01	C	22	CY-4N7/400V-95	H5_h	Y-KOPPL 4N7 400V 20% WKP	ROEDERSTEIN	CERAMIC DISC CAPACITOR CLASS Y WKP600 4N7 400V 20% - WKP472MCPEJOK
AP-238.21*.00-01	C	23	CE-220U/400V-NA	G3_v	ELKO 220U 400V 31X37 KMH	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR KMH-VN-220U/400V-M-30X35
AP-238.21*.	C	24	CM-1U/100V-W7	G4_v	MEKO 1U 100V 20% MKS2-I	WIMA	METALL. POLYESTER FILM CAPACITOR MKS2-I 1U/100V 20% TAPED
AP-238.21*.00-01	C	25	CM-1U/100V-W7	F4_v	MEKO 1U 100V 20% MKS2-I	WIMA	METALL. POLYESTER FILM CAPACITOR MKS2-I 1U/100V 20% TAPED
AP-238.21*.00-01	C	28	CM-2U2/250V-50	F3_h	MEKO 2U2 250V 20% MKT1822	ROEDERSTEIN	METALL. POLYESTER FILM CAPACITOR MKT1822-522/25 6
AP-238.21*.00-01	C	33	CY-4N7/400V-95	H5_h	Y-KOPPL 4N7 400V 20% WKP	ROEDERSTEIN	CERAMIC DISC CAPACITOR CLASS Y WKP600 4N7 400V 20% - WKP472MCPEJOK
AP-238.21*.00-01	C	43	CE-1500U/25V-64	B4_h	ELKO 1500U 25V 13X31 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 25 VB-1500 12.5X30
AP-238.21*.00-01	C	44	CE-1500U/25V-64	A2_h	ELKO 1500U 25V 13X31 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 25 VB-1500 12.5X30
AP-238.21*.00-01	C	45	CE-1000U/10V-64	B3_h	ELKO 1000U 10V 10.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF10VB-1000 10X20 TPA OR WITHOUT TPA
AP-238.21*.00-01	C	52	CE-100U/50V-65	A1_h	ELKO 100U 50V 10.5X16 SXE	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR SXE 50 VB-100 10X15 TPA OR WITHOUT TPA
AP-238.21*.00-01	C	59	CE-100U/50V-65	C3_h	ELKO 100U 50V 10.5X16 SXE	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR SXE 50 VB-100 10X15 TPA OR WITHOUT TPA
AP-238.21*.00-01	C	69	CE-220U/25V-64	E5_v	ELKO 220U 25V 8.5X16 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF25VB-220 8X15 TPA3.5 OR WITHOUT TPA
AP-238.21*.00-01	C	70	CV-1N/63V-C2		SMD-VIELKO 1N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 1NF/63V X7R 10% - 2222 581 16614
AP-238.21*.00-01	C	71	CK-2N2/500V-35	D6_h	KERKO 2N2 500V 10% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 K2000 2N2 10% 500V TAPED - 2222 655 53222
AP-238.21*.00-01	C	72	CM-100N/400V-40	D6_v	MEKO 100N 400V 20% MKT1.60	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.60 MI 3100 AA 00 M
AP-238.21*.00-01	C	73	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.21*.00-01	C	74	CV-470P/63V-C1		SMD-VIELKO 470P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 470PF/63V NP0 5% - 2222 863 15471
AP-238.21*.00-01	C	75	CE-820U/16V-64	B3_h	ELKO 820U 16V 10.5X26 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 16 VB-820 10X25
AP-238.21*.00-01	C	79	CM-100N/63V-20	E5_v	MEKO 100N 63V 20% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 DC 3100 191/201 M
AP-238.21*.00-01	C	80	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.21*.00-01	C	81	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.21*.00-01	C	82	CV-47N/63V-C2		SMD-VIELKO 47N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 47NF/63V X7R 10% - 2222 581 16636
AP-238.21*.00-01	C	83	CE-220U/35V-74	C4_h	ELKO 220U 35V 8.5X22 PL	NICHICON	ELECTROLYTIC CAPACITOR UPL1V221MPH
AP-238.21*.00-01	C	84	CE-330U/25V-64	C3_h	ELKO 330U 25V 8.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF25VB-330 8X20 TPA3.5 OR WITHOUT TPA
AP-238.21*.00-01	C	85	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.21*.00-01	C	86	CE-220U/35V-74	B4_h	ELKO 220U 35V 8.5X22 PL	NICHICON	ELECTROLYTIC CAPACITOR UPL1V221MPH
AP-238.21*.00-01	C	87	CE-120U/16V-64	B5_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.21*.00-01	C	88	CE-22U/50V-30	B5_h	ELKO 22U 50V 5.5X12 RLL	PHILIPS COMPONENTS	ELECTROLYTIC CAPACITOR RLL 22U/50V - 2222 116 11229
AP-238.21*.00-01	C	89	CV-100P/63V-C1		SMD-VIELKO 100P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100PF/63V NP0 5% - 2222 863 15101
AP-238.21*.00-01	C	90	CV-1N/63V-C2		SMD-VIELKO 1N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 1NF/63V X7R 10% - 2222 581 16614
AP-238.21*.00-01	C	91	CV-1N/63V-C2		SMD-VIELKO 1N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 1NF/63V X7R 10% - 2222 581 16614
AP-238.21*.00-01	C	92	CK-47P/1000V-70	B5_v	KERKO 47P 1000V 10% RAU	ROEDERSTEIN	CERAMIC DISC CAPACITOR RAU470KBACRA(RC,LA,LC)K OR RAU470KBACFOK
AP-238.21*.00-01	C	93	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.21*.00-01	C	94	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.21*.00-01	C	95	CV-10N/500V-C7		SMD-VIELKO 10N 500V 10% X7R 1210	VITRAMON	CERAM. MULTILAYER CHIP CAPACITOR 10NF/500V X7R 10% - VJ1210Y103KXET
AP-238.21*.00-01	C	96	CV-10N/500V-C7		SMD-VIELKO 10N 500V 10% X7R 1210	VITRAMON	CERAM. MULTILAYER CHIP CAPACITOR 10NF/500V X7R 10% - VJ1210Y103KXET
AP-238.21*.00-01	C	97	CE-120U/16V-64	B5_v	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.21*.00-01	C	98	CE-120U/16V-64	B5_v	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.21*.00-01	D	1	D-4001BCM-C2		SMD-NOR 2INP 4-FACH SO14	NATIONAL SEMICOND.	QUAD 2-INPUT NOR CD4001BCM
AP-238.21*.00-01	D	2	D-4013BCM-C2		SMD-D-FLIP-FLOP 2-FACH SO14	NATIONAL SEMICOND.	DUAL D-FLIP-FLOP CD4013BCM
AP-238.21*.00-01	D	3	D-4013BCM-C2		SMD-D-FLIP-FLOP 2-FACH SO14	NATIONAL SEMICOND.	DUAL D-FLIP-FLOP CD4013BCM
AP-238.21*.00-01	E	1	AP-238.212.00-01		SMDM-BLP TYP A	PULS MÜNCHEN	
AP-238.21*.00-01	E	1	AP-238.213.00-01	E6_h	SMDM-ALP TYP A	PULS MÜNCHEN	
AP-238.21*.00-01	E	1	EP-238.215.00-10		SMDM-LP 208X131X1.6 35U 2LAG	WALTER	
AP-238.21*.00-01	E	4	ES-STEZU3-10		STECKZUNGE 2.8X0.8 STEH/GER 2PIN	VOGT AG SCHWEIZ	TAB FLAT 2.8X0.8 - 03785A/0.8 BZ SN OR MS SN
AP-238.21*.00-01	E	5	ES-STEZU3-10		STECKZUNGE 2.8X0.8 STEH/GER 2PIN	VOGT AG SCHWEIZ	TAB FLAT 2.8X0.8 - 03785A/0.8 BZ SN OR MS SN
AP-238.21*.00-01	E	16	WI-238.810.00-10	B2_h	KABEL BL 1.34QMM STEHU6 240MM ELH	MD ELEKTRONIK	
AP-238.21*.00-01	E	18	XF-212.780.00-20	B1_h	STECKER 7POL MIT KABEL UND ELH	MD ELEKTRONIK	
AP-238.21*.00-01	E	23	WI-238.820.00-10	B2_h	KABEL RT 1.34QMM STEHU6 100MM ELH	MD ELEKTRONIK	
AP-238.21*.00-01	E	28	WI-238.870.00-10	I4_h	KABEL RT 0.86QMM STEHU6 70MM ELH	MD ELEKTRONIK	
AP-238.21*.00-01	E	29	WI-238.870.01-10	I4_h	KABEL BL 0.86QMM STEHU6 70MM ELH	MD ELEKTRONIK	
AP-238.21*.00-01	E	31	ES-RM254-61	F2_h	DRAHTBRÜCKE RM25.4 DM0.52 ISOLIERT	QUICK-OHM	WIRE JUMPER INSULATED RM25.4 DM0.52 - DB052-2540G

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.21*.00-01	E	32	ES-RM254-80	F3_h	DRAHTBRÜCKE RM25.4 DM0.6 ISOLIERT	BAYKRA	WIRE JUMPER RM25.4 X SL2.9(AB BT-UK) X DM0.60 INSULATED PVC105C
AP-238.21*.00-01	E	33	AH-238.670.00-01	E6_v	KÜHLBLECH BESTÜCKT STANDBY	PULS MÜNCHEN	
AP-238.21*.00-01	E	34	ES-RM356-82	A2_v	DRAHTBRÜCKE RM35.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM35.6 X 4 X 1.00MM .INSULATED
AP-238.21*.00-01	E	36	ES-RM356-82		DRAHTBRÜCKE RM35.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM35.6 X 4 X 1.00MM INSULATED
AP-238.21*.00-01	L	1	LB-33U/A5-10	D3 v	HF-DROSSEL 33UH 0A5 4X9.2 B78108	SIEMENS	HF-CHOKE 33UH 0.5A - B78108-S1333-K
AP-238.21*.00-01	L	2	LY-2X6M8/2A-10	H6_v	STROMKOMP.DR 2X6M8H 2A 31X18X33	SIEMENS	CURRENT COMPENSATED CHOKE 2X6.8MH/2A - B82724-J2202-N1
AP-238.21*.00-01	L	3	LE-238.550.00-20	G2_v	E42/15-DROSSEL 130UH 9A	EGSTON	
AP-238.21*.00-01	L	25	LB-10U/A68-10	C4_v	HF-DROSSEL 10UH 0A68 4X9.2 B78108	SIEMENS	HF-CHOKE 10UH 0.68A - B78108-S1103-K
AP-238.21*.00-01	L	26	LB-10U/A68-10	C4_v	HF-DROSSEL 10UH 0A68 4X9.2 B78108	SIEMENS	HF-CHOKE 10UH 0.68A - B78108-S1103-K
AP-238.21*.00-01	L	27	LB-10U/A68-10	B4_v	HF-DROSSEL 10UH 0A68 4X9.2 B78108	SIEMENS	HF-CHOKE 10UH 0.68A - B78108-S1103-K
AP-238.21*.00-01	L	28	LB-192.550.00-10	G4_h	STABKERNDROSSEL 1U1H 7A 4X13.3	HAGN	
AP-238.21*.00-01	N	4	N-431CLP-13	E4_v	SPG.REF 2V495 0A1 1% TO92	MOTOROLA	VOLTAGE REFERENCE TL431CLPRA - SELECTED UNDER 936.014.01
AP-238.21*.00-01	N	15	N-339D-C1		SMD-KOMP 4-FACH 36V 5MV 6MA SO14	MOTOROLA	QUAD COMPARATOR LM339D
AP-238.21*.00-01	N	17	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.21*.00-01	N	18	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.21*.00-01	N	19	N-431CLP-13	B4_v	SPG.REF 2V495 0A1 1% TO92	MOTOROLA	VOLTAGE REFERENCE TL431CLPRA - SELECTED UNDER 936.014.01
AP-238.21*.00-01	R	29	RM-1R00-10	E2_h	MET.WID 1R00 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R00 1% TK100 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	30	RM-4K22-10	E3_h	MET.WID 4K22 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 4K22 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	31	RM-10R0-10	E2_h	MET.WID 10R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 10R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	32	RM-249R0-10	E3_v	MET.WID 249R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 249R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	33	RM-20R5-C1		SMD-METWID 20R5 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 20R5
AP-238.21*.00-01	R	34	RW-0R050/2W4-L2	F2 h	DRAHTWID 0R050 1% 2.4W +TK75 LVR3	DALE	WIRE-WOUND RESISTOR LVR-3 0.050R 1%
AP-238.21*.00-01	R	35	RM-51R1-10	E3_v	MET.WID 51R1 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 51R1 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	36	RW-330R/1W-40	E3_v	M-OXIDWID 330R 5% 1.0W TK200 WK4	ROEDERSTEIN	METALOXIDE RESISTOR WK4 330R J B
AP-238.21*.00-01	R	37	RM-3K83-C1		SMD-METWID 3K83 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K83
AP-238.21*.00-01	R	38	RM-825K0-10	F3_h	MET.WID 825K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 825K0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	39	RM-787K0-10	F3_h	MET.WID 787K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 787K0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	40	RM-4K42-10	E3_h	MET.WID 4K42 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 4K42 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	41	RM-348R0-10	E3_v	MET.WID 348R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 348R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	42	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.21*.00-01	R	43	RM-3K83-C1		SMD-METWID 3K83 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K83
AP-238.21*.00-01	R	44	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	45	RM-14K7-C1		SMD-METWID 14K7 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 14K7
AP-238.21*.00-01	R	46	RM-1K87-C1		SMD-METWID 1K87 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K87
AP-238.21*.00-01	R	47	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	48	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	49	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.21*.00-01	R	50	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	51	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	52	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.21*.00-01	R	53	RM-22K6-C1		SMD-METWID 22K6 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 22K6
AP-238.21*.00-01	R	69	RW-0R012-D2	F4_h	WIDERST.DRAHT 0R012 1.0X15.24	HÜTTLINGER	ZERO OHM RESISTOR DM1.0 RM15.24 SL=4.4 - 16633
AP-238.21*.00-01	R	70	RM-8R25-C1		SMD-METWID 8R25 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 8R25
AP-238.21*.00-01	R	71	RK-8R2-10	F4_h	KOHLE.WID 8R2 5% 0.33W +TK200 CR25	PHILIPS COMPONENTS	CARBON FILM RESISTOR CR25 8R2 TAPED - 2322 211 73828
AP-238.21*.00-01	R	72	RM-8R25-C1		SMD-METWID 8R25 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 8R25
AP-238.21*.00-01	R	73	RW-0R012-D2	E4_v	WIDERST.DRAHT 0R012 1.0X15.24	HÜTTLINGER	ZERO OHM RESISTOR DM1.0 RM15.24 SL=4.4 - 16633
AP-238.21*.00-01	R	74	RK-8R2-10	F5_h	KOHLE.WID 8R2 5% 0.33W +TK200 CR25	PHILIPS COMPONENTS	CARBON FILM RESISTOR CR25 8R2 TAPED - 2322 211 73828
AP-238.21*.00-01	R	80	RM-1M00-C1		SMD-METWID 1M00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1M00
AP-238.21*.00-01	R	201	RM-332R0-C1		SMD-METWID 332R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 332R
AP-238.21*.00-01	R	202	RM-26K1-10	F6_h	MET.WID 26K1 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 26K1 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	203	RM-205R0-10	D4_v	MET.WID 205R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 205R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	204	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.21*.00-01	R	205	RM-1R00-10	F5 h	MET.WID 1R00 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R00 1% TK100 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	206	RM-1R21-10	E5_h	MET.WID 1R21 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R21 1% TK100 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	207	RM-1M5-R8	G5_h	MET.GL.WID 1M5 5% 0.25W 1600V VR25	PHILIPS COMPONENTS	METALLIZED CERAMIC RESISTOR VR25 1M5 5% TAPED - 2322 241 13155
AP-238.21*.00-01	R	208	RM-1M5-R8	G5_h	MET.GL.WID 1M5 5% 0.25W 1600V VR25	PHILIPS COMPONENTS	METALLIZED CERAMIC RESISTOR VR25 1M5 5% TAPED - 2322 241 13155
AP-238.21*.00-01	R	209	RM-1M0-R8	G5_h	MET.GL.WID 1M0 5% 0.25W 1600V VR25	PHILIPS COMPONENTS	METALLIZED CERAMIC RESISTOR VR25 1M0 5% TAPED - 2322 241 13105
AP-238.21*.00-01	R	210	RM-11K0-C1		SMD-METWID 11K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 11K0
AP-238.21*.00-01	R	211	RY-4R7-10	G5_v	DEFDURWID 4R7 5% 0W3 +TK200 SKS2	ROEDERSTEIN	FUSIBLE RESISTOR SKS2 4R7 5% TAPED - SS204R7JR
AP-238.21*.00-01	R	212	RM-11K0-C1		SMD-METWID 11K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 11K0

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.21*.00-01	R	213	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	214	RM-825R0-C1		SMD-METWID 825R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 825R
AP-238.21*.00-01	R	215	RM-383K0-C1		SMD-METWID 383K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 383K
AP-238.21*.00-01	R	216	RM-3K32-C1		SMD-METWID 3K32 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K32
AP-238.21*.00-01	R	217	RM-825R0-10	A5 h	MET.WID 825R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 825R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	218	RM-2K49-C1		SMD-METWID 2K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K49
AP-238.21*.00-01	R	219	RM-2K15-C1		SMD-METWID 2K15 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K15
AP-238.21*.00-01	R	220	RM-464K0-C1		SMD-METWID 464K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 464K
AP-238.21*.00-01	R	221	RM-10K5-C2		SMD-METWID 10K5 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 10K5
AP-238.21*.00-01	R	222	RM-5K23-C2		SMD-METWID 5K23 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 5K23
AP-238.21*.00-01	R	223	RM-464R0-C1		SMD-METWID 464R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 464R
AP-238.21*.00-01	R	224	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	225	RM-205R0-C1		SMD-METWID 205R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 205R
AP-238.21*.00-01	R	226	RM-14K7-C1		SMD-METWID 14K7 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 14K7
AP-238.21*.00-01	R	227	RM-16K2-C1		SMD-METWID 16K2 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 16K2
AP-238.21*.00-01	R	228	RM-11K0-C1		SMD-METWID 11K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 11K0
AP-238.21*.00-01	R	229	RM-909R0-10	B4_v	MET.WID 909R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 909R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	230	RM-274R0-10	A5_h	MET.WID 274R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 274R0 1% TK50 300V 0.6W/70C TAPED
AP-238.21*.00-01	R	231	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.21*.00-01	R	232	RM-51R1-C1		SMD-METWID 51R1 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 51R1
AP-238.21*.00-01	R	233	RM-11K0-C1		SMD-METWID 11K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 11K0
AP-238.21*.00-01	R	234	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.21*.00-01	R	235	RM-196R0-C1		SMD-METWID 196R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 196R
AP-238.21*.00-01	R	236	RM-3K65-C1		SMD-METWID 3K65 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K65
AP-238.21*.00-01	R	237	RM-1R00-C1		SMD-METWID 1R00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1R00
AP-238.21*.00-01	R	238	RM-3K65-C1		SMD-METWID 3K65 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K65
AP-238.21*.00-01	R	239	RM-3K65-C1		SMD-METWID 3K65 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K65
AP-238.21*.00-01	R	240	RM-46R4-C1		SMD-METWID 46R4 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 46R4
AP-238.21*.00-01	R	241	RM-27K4-C1		SMD-METWID 27K4 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 27K4
AP-238.21*.00-01	R	242	RM-2K49-C1		SMD-METWID 2K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K49
AP-238.21*.00-01	R	243	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.21*.00-01	R	244	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.21*.00-01	R	245	RM-46R4-C1		SMD-METWID 46R4 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 46R4
AP-238.21*.00-01	R	246	RM-205R0-C1		SMD-METWID 205R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 205R
AP-238.21*.00-01	R	247	RM-100K0-C1		SMD-METWID 100K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100K
AP-238.21*.00-01	R	248	RT-10K-20	A5_h	MESS-NTC 10K 10% 0W75 K164	SIEMENS	NTC K164/10%/10K - B57164-K103-K TAPED OR UNTAPED
AP-238.21*.00-01	R	249	RM-487R0-C1		SMD-METWID 487R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 487R
AP-238.21*.00-01	R	250	RM-5R62-C1		SMD-METWID 5R62 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5R62
AP-238.21*.00-01	R	251	RM-5R62-C1		SMD-METWID 5R62 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5R62
AP-238.21*.00-01	R	252	RM-5R62-C1		SMD-METWID 5R62 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5R62
AP-238.21*.00-01	R	253	RM-2K37-C1		SMD-METWID 2K37 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K37
AP-238.21*.00-01	R	254	RM-5R62-C1		SMD-METWID 5R62 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5R62
AP-238.21*.00-01	R	255	RM-100K0-C1		SMD-METWID 100K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100K
AP-238.21*.00-01	T	1	TE-238.590.00-20	C2_v	ETD44-ÜBERTRAGER	EGSTON	
AP-238.21*.00-01	T	2	TE-238.530.00-20	C5_v	ETD24-ÜBERTRAGER (STANDBY)	EGSTON	
AP-238.21*.00-01	T	3	TE-238.580.00-20	F5_h	EF16-ÜBERTRAGER (ANSTEUERUNG)	EGSTON	
AP-238.21*.00-01	U	1	U-SFH617G2-16	C4_v	OPTOKO 5K3V 60-70%-BL 10MA 70V DIP4	SIEMENS	OPTOCOUPLER SFH617G2 - Q62703-N128-X1 - SELECTED UNDER 936.011
AP-238.21*.00-01	U	2	U-SFH617G2-16	C3_v	OPTOKO 5K3V 60-70%-BL 10MA 70V DIP4	SIEMENS	OPTOCOUPLER SFH617G2 - Q62703-N128-X1 - SELECTED UNDER 936.011
AP-238.21*.00-01	U	3	U-SFH617G2-16	C4_v	OPTOKO 5K3V 60-70%-BL 10MA 70V DIP4	SIEMENS	OPTOCOUPLER SFH617G2 - Q62703-N128-X1 - SELECTED UNDER 936.011
AP-238.21*.00-01	U	4	U-SFH617G2-16	C4_v	OPTOKO 5K3V 60-70%-BL 10MA 70V DIP4	SIEMENS	OPTOCOUPLER SFH617G2 - Q62703-N128-X1 - SELECTED UNDER 936.011
AP-238.21*.00-01	V	22	VD-BAV103-C1		SMD-DIODE 250V 0A25 SOD80	PHILIPS COMPONENTS	RECTIFIER DIODE BAV103 SOD80C - 9336 993 60115 (REEL 7")
AP-238.21*.00-01	V	23	VD-BAV103-C1		SMD-DIODE 250V 0A25 SOD80	PHILIPS COMPONENTS	RECTIFIER DIODE BAV103 SOD80C - 9336 993 60115 (REEL 7")
AP-238.21*.00-01	V	24	VT-FMMT591-C1		SMD-PNP-TRANS 80V 1A 0W3 SOT23	ZETEX	PNP-TRANSISTOR FMMT591 SOT23 TAPED - FMMT591TA
AP-238.21*.00-01	V	25	VD-SB140-10	F5_h	SCHOTTKY 40V 1A 0V5 DO41	GENERAL INSTRUMENTS	SCHOTTKY DIODE SB140 TAPED
AP-238.21*.00-01	V	26	VD-SB140-10	F5_h	SCHOTTKY 40V 1A 0V5 DO41	GENERAL INSTRUMENTS	SCHOTTKY DIODE SB140 TAPED
AP-238.21*.00-01	V	27	VT-FMMT591-C1		SMD-PNP-TRANS 80V 1A 0W3 SOT23	ZETEX	PNP-TRANSISTOR FMMT591 SOT23 TAPED - FMMT591TA
AP-238.21*.00-01	V	28	VM-2SK1723-1F	E2_h	N-MOSFET 600V 0R65 150W CA.TO247	TOSHIBA	POWER MOS-FET 2SK1723
AP-238.21*.00-01	V	29	V2-BZX79C15-10	E2_h	Z-DIODE 15V 6% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX 79-C15 TAPED - 9331 1783 0113
AP-238.21*.00-01	V	30	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	31	VT-FMMT491-C1		SMD-NPN-TRANS 80V 1A 0W3 SOT23	ZETEX	NPN-TRANSISTOR FMMT491 SOT23 TAPED - FMMT491TA

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.21*.00-01	V	32	VT-FMMT591-C1		SMD-PNP-TRANS 80V 1A 0W3 SOT23	ZETEX	PNP-TRANSISTOR FMMT591 SOT23 TAPED - FMMT591TA
AP-238.21*.00-01	V	33	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	34	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	35	VT-FMMT591-C1		SMD-PNP-TRANS 80V 1A 0W3 SOT23	ZETEX	PNP-TRANSISTOR FMMT591 SOT23 TAPED - FMMT591TA
AP-238.21*.00-01	V	36	VD-BA159GP-10	E2 v	DIODE 1000V 0A5 500NS DO41	GENERAL INSTRUMENTS	RECTIFIER DIODE BA159GP TAPED
AP-238.21*.00-01	V	37	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	38	VT-FMMT491-C1		SMD-NPN-TRANS 80V 1A 0W3 SOT23	ZETEX	NPN-TRANSISTOR FMMT491 SOT23 TAPED - FMMT491TA
AP-238.21*.00-01	V	39	VD-BAV103-C1		SMD-DIODE 250V 0A25 SOD80	PHILIPS COMPONENTS	RECTIFIER DIODE BAV103 SOD80C - 9336 993 60115 (REEL 7")
AP-238.21*.00-01	V	40	VT-FMMT491-C1		SMD-NPN-TRANS 80V 1A 0W3 SOT23	ZETEX	NPN-TRANSISTOR FMMT491 SOT23 TAPED - FMMT491TA
AP-238.21*.00-01	V	41	VD-BAV103-C1		SMD-DIODE 250V 0A25 SOD80	PHILIPS COMPONENTS	RECTIFIER DIODE BAV103 SOD80C - 9336 993 60115 (REEL 7")
AP-238.21*.00-01	V	42	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	43	VT-BC856B-C1		SMD-PNP-TRANS 80V 0A1 0W2 SOT23	PHILIPS COMPONENTS	PNP-TRANSISTOR BC856B SOT23 - 9335 897 30215 (REEL 7")
AP-238.21*.00-01	V	44	VT-BC856B-C1		SMD-PNP-TRANS 80V 0A1 0W2 SOT23	PHILIPS COMPONENTS	PNP-TRANSISTOR BC856B SOT23 - 9335 897 30215 (REEL 7")
AP-238.21*.00-01	V	57	VT-FMMT491-C1		SMD-NPN-TRANS 80V 1A 0W3 SOT23	ZETEX	NPN-TRANSISTOR FMMT491 SOT23 TAPED - FMMT491TA
AP-238.21*.00-01	V	59	VD-BAS21-C1		SMD-DIODE 250V 0A2 SOT23	SIEMENS	RECTIFIER DIODE BAS21 - Q62702-A79 (TAPE:E6327)
AP-238.21*.00-01	V	61	VD-BAS21-C1		SMD-DIODE 250V 0A2 SOT23	SIEMENS	RECTIFIER DIODE BAS21 - Q62702-A79 (TAPE:E6327)
AP-238.21*.00-01	V	62	VT-FMMT491-C1		SMD-NPN-TRANS 80V 1A 0W3 SOT23	ZETEX	NPN-TRANSISTOR FMMT491 SOT23 TAPED - FMMT491TA
AP-238.21*.00-01	V	63	VZ-15KE200-10	F3_h	SUPPRESSOR 200V/1MA 5W DO201	GENERAL INSTRUMENTS	SUPRESSOR DIODE 1.5KE200
AP-238.21*.00-01	V	64	VD-MUR860-1F	F2_h	DIODE 600V 8A 60NS TO220	MOTOROLA	RECTIFIER DIODE MUR860
AP-238.21*.00-01	V	78	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	79	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	80	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	81	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	82	VD-MBR2030CTL-1E		SCHOTTKY 30V 2X10A 0V52 TO220	MOTOROLA	SCHOTTKY DUAL DIODE MBR2030CTL
AP-238.21*.00-01	V	83	VD-S10SC4MR-1E		SCHOTTKY 40V 2X5A 0V55 TO220	SHINDENGEN	SCHOTTKY DUAL DIODE S10SC4MR
AP-238.21*.00-01	V	84	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	85	VD-USD945-1E		SCHOTTKY 45V 16A 0V6 TO220	MICROSEMI CORP.	SCHOTTKY DIODE USD945
AP-238.21*.00-01	V	86	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	87	VD-USD945-1E		SCHOTTKY 45V 16A 0V6 TO220	MICROSEMI CORP.	SCHOTTKY DIODE USD945
AP-238.21*.00-01	V	97	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	98	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	99	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	100	VD-BYS21/45-10	C1_h	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.21*.00-01	V	110	VT-BD139/16-19	E5_h	NPN-TRANS 100V 1A5 12W5 TO126	PHILIPS COMPONENTS	NPN-TRANSISTOR BD139-16 - 9332 6975 0127
AP-238.21*.00-01	V	111	VZ-BZX79B13-13	D5_v	Z-DIODE 13V 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B13 TAPED - 9331 669 00113
AP-238.21*.00-01	V	112	VD-UF4004-10	D4_h	DIODE 400V 1A 50NS DO41	GENERAL INSTRUMENTS	RECTIFIER DIODE UF4004 TAPED
AP-238.21*.00-01	V	113	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.21*.00-01	V	114	VZ-BZX79C12-10	E5_v	Z-DIODE 12V 6% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX 79-C12 TAPED - 9331 1781 0113
AP-238.21*.00-01	V	115	VZ-BZX79C5V1-10	F6_h	Z-DIODE 5V1 6% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX 79-C5V1 TAPED - 9331 1772 0113
AP-238.21*.00-01	V	116	VM-2SK1643-15		N-MOSFET 900V 2R8 125W TO220	TOSHIBA	POWER MOS-FET 2SK1643
AP-238.21*.00-01	V	117	VD-BA159GP-10	D5_v	DIODE 1000V 0A5 500NS DO41	GENERAL INSTRUMENTS	RECTIFIER DIODE BA159GP TAPED
AP-238.21*.00-01	V	118	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.21*.00-01	V	119	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.21*.00-01	V	120	VZ-BZX79C56-10	G5_h	Z-DIODE 56V 6% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX 79-C56 TAPED - 9331 179 70113
AP-238.21*.00-01	V	124	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	125	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.21*.00-01	V	126	VM-BSS110-10	A4_v	P-MOSFET -50V 10R 0W63 TO92	SIEMENS	SIPMOS SMALL-SIGNAL TRANSISTOR BSS110 TAPED - Q62702-S500
AP-238.21*.00-01	V	127	VD-1N4148-10	B5_h	DIODE 75V 0A15 4NS DO35	PHILIPS COMPONENTS	RECTIFIER DIODE 1N4148 TAPED - 9330 8399 0113
AP-238.21*.00-01	V	131	VM-IRFP250-19	F4_v	N-MOSFET 200V 0R085 180W TO247	HARRIS	POWER MOSFET IRFP250
AP-238.21*.00-01	V	132	VM-IRFP250-19	G4_v	N-MOSFET 200V 0R085 180W TO247	HARRIS	POWER MOSFET IRFP250
AP-238.21*.00-01	V	133	VD-S10SC4M-1E		SCHOTTKY 40V 2X5A 0V55 TO220	SHINDENGEN	SCHOTTKY DUAL DIODE S10SC4M
AP-238.21*.00-01	V	135	VD-BYV27/150-10	C4_v	DIODE 150V 2A 25NS SOD57	PHILIPS COMPONENTS	RECTIFIER DIODE BYV 27/150 TAPED - 9335 4351 0113
AP-238.21*.00-01	V	136	VD-UF4004-10	C4_v	DIODE 400V 1A 50NS DO41	GENERAL INSTRUMENTS	RECTIFIER DIODE UF4004 TAPED
AP-238.21*.00-01	V	137	VZ-BZX79B18-13	B4_v	Z-DIODE 18V 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B18 TAPED - 9331 669 30113
AP-238.21*.00-01	V	138	VT-ZTX450-10	B5_v	NPN-TRANS 60V 1A 1W TO92E	ZETEX	NPN-TRANSISTOR ZTX450 STOA OR ZTX450 STZA
AP-238.21*.00-01	V	139	VZ-BZX79C5V6-10	F3_h	Z-DIODE 5V6 6% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX 79-C5V6 TAPED - 9331 1773 0113
AP-238.21*.00-01	V	140	VZ-BZX79B16-13	D4_v	Z-DIODE 16V 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B16 TAPED - 9331 669 20113
AP-238.21*.00-01	V	141	VT-BDX54-29	A5_v	PNP-DARL 45V 8A 60W TO220	SGS-THOMSON	PNP-DARLINGTON TRANSISTOR BDX54
AP-238.21*.00-01	V	143	VT-FMMT591-C1		SMD-PNP-TRANS 80V 1A 0W3 SOT23	ZETEX	PNP-TRANSISTOR FMMT591 SOT23 TAPED - FMMT591TA
AP-238.21*.00-01	V	144	VZ-ZY3V9-12	A6 h	Z-DIODE 3V9 6% 2W 58A2	ITT	Z-DIODE 2Y3.9 5% TAPED

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.21*.00-01	X	2	XM-2X8G-A8	B6_h	ST.LEISTE 2X8P GER RM2.54 1A AU	ASSMANN ELEKTRONIK	CONNECTOR RM2.54 STRAIGHT - AWHW 16G-0202
AP-238.21*.00-01	X	3	XM-1X8G-R9	H4_v	ST.LEISTE 1X8P GER RM2.54 3A AU 6.8	RATIOPLAST	PIN HEADER SERIES 010 1X8P 0.63X0.63 - 010 02 25 112 008
AP-238.21*.00-01	X	4	XM-1X2G-90	A6_h	ST.LEISTE 1X2P GER RM2.54 2A5 SN 7.5	MOLEX	PIN HEADER SERIES 6410 2PIN 2.54 0.64X0.64 - 22-27-2021
AP-238.22*.00-01	C	29	CY-470N/250V-20	I5_v	X2-KO 470N 250V 10% F1772	ROEDERSTEIN	X2-CAPACITOR 470N 250V - F1772-447-2900(-2901) OR -2000
AP-238.22*.00-01	C	31	CE-470U/200V-N2	J3_h	ELKO 470U 200V 23X42 KMH	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR KMH-VN-470U/200V-M-22X40
AP-238.22*.00-01	C	32	CE-680U/200V-NA	J2_h	ELKO 680U 200V 26.4X42 KMH	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR KMH-VN-680U/200V-M-25.4X40
AP-238.22*.00-01	C	55	CM-470N/63V-20	G3_h	MEKO 470N 63V 20% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 DC 3470 191/201 M
AP-238.22*.00-01	C	56	CM-1N5/100V-10	B6_v	MEKO 1N5 100V 5% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 EC 1150 191/201 J
AP-238.22*.00-01	C	57	CM-1U/50V-15	F4_v	MEKO 1U 50V 10% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 CC 4100 191/201 K
AP-238.22*.00-01	C	58	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	59	CE-120U/16V-64	D1_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	60	CE-120U/16V-64	D2_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	61	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	62	CK-100P/100V-10	G5_v	KERKO 100P 100V 2% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 NP0 100P 2% 100V TAPED - 2222 679 34101
AP-238.22*.00-01	C	63	CK-68P/100V-10	A5_v	KERKO 68P 100V 2% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 NP0 68P 2% 100V TAPED - 2222 679 10689
AP-238.22*.00-01	C	64	CV-1N/63V-C2		SMD-VIELKO 1N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 1NF/63V X7R 10% - 2222 581 16614
AP-238.22*.00-01	C	65	CE-1000U/25V-64	G2_h	ELKO 1000U 25V 13X26 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 25 VB-1000 12.5X25
AP-238.22*.00-01	C	66	CE-100U/50V-65	E2_h	ELKO 100U 50V 10.5X16 SXE	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR SXE 50 VB-100 10X15 TPA OR WITHOUT TPA
AP-238.22*.00-01	C	67	CE-330U/25V-64	D2_h	ELKO 330U 25V 8.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF25VB-330 8X20 TPA3.5 OR WITHOUT TPA
AP-238.22*.00-01	C	68	CE-1500U/10V-64	F2_h	ELKO 1500U 10V 10.5X31 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 10 VB-1500 10X30
AP-238.22*.00-01	C	69	CK-220P/100V-15	C4_v	KERKO 220P 100V 10% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 K2000 220P 10% 100V TAPED - 2222 630 53221
AP-238.22*.00-01	C	70	CE-1000U/10V-64	B2_h	ELKO 1000U 10V 10.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF10VB-1000 10X20 TPA OR WITHOUT TPA
AP-238.22*.00-01	C	71	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	72	CM-2N2/100V-10	D3_v	MEKO 2N2 100V 5% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 EC 1220 191/201 J
AP-238.22*.00-01	C	73	CE-1000U/10V-64	F1_h	ELKO 1000U 10V 10.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF10VB-1000 10X20 TPA OR WITHOUT TPA
AP-238.22*.00-01	C	74	CE-120U/16V-64	C4_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	75	CE-1000U/25V-64	C1_h	ELKO 1000U 25V 13X26 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 25 VB-1000 12.5X25
AP-238.22*.00-01	C	76	CE-1000U/25V-64	C1_h	ELKO 1000U 25V 13X26 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 25 VB-1000 12.5X25
AP-238.22*.00-01	C	77	CK-68P/100V-10	C3_v	KERKO 68P 100V 2% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 NP0 68P 2% 100V TAPED - 2222 679 10689
AP-238.22*.00-01	C	78	CK-68P/100V-10	C3_h	KERKO 68P 100V 2% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 NP0 68P 2% 100V TAPED - 2222 679 10689
AP-238.22*.00-01	C	79	CE-2U2/50V-30	C2_h	ELKO 2U2 50V 5.5X12 RLL	PHILIPS COMPONENTS	ELECTROLYTIC CAPACITOR RLL 2U2/50V - 2222 116 11228
AP-238.22*.00-01	C	80	CF-6N8/250V-62	B1_v	FOKO 6N8 250V 20% FKS2	WIMA	POLYESTER FILM CAPACITOR FKS2 6N8 250VDC/160VAC 20% TAPED
AP-238.22*.00-01	C	81	CY-68N/250V-70	H1_v	X2-KO 68N 250V 20% MKT1.47	ARCOTRONICS	X2-CAPACITOR MKT1.47 68N 250V 20% ABM.6X12X18 - R47LI26800060M
AP-238.22*.00-01	C	82	CE-100U/50V-65	G2_h	ELKO 100U 50V 10.5X16 SXE	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR SXE 50 VB-100 10X15 TPA OR WITHOUT TPA
AP-238.22*.00-01	C	83	CE-1000U/25V-64	G2_h	ELKO 1000U 25V 13X26 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF 25 VB-1000 12.5X25
AP-238.22*.00-01	C	84	CE-1000U/10V-64	F2_h	ELKO 1000U 10V 10.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF10VB-1000 10X20 TPA OR WITHOUT TPA
AP-238.22*.00-01	C	85	CV-220N/63V-C3		SMD-VIELKO 220N 63V 10% X7R 1210	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220NF/63V X7R 10% - 2222 582 16645
AP-238.22*.00-01	C	86	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	87	CE-120U/16V-64	D3_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	88	CE-120U/16V-64	D3_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	89	CE-120U/16V-64	D3_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	90	CE-120U/16V-64	D3_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	91	CE-120U/16V-64	D3_h	ELKO 120U 16V 6.8X12.5 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF16VB-120 6.3X11.5 TPA2.5 OR WITHOUT TPA
AP-238.22*.00-01	C	92	CS-220U/10V-30	E2_h	SELKO 220U 10V 10X10.5 OS-CON	SANYO	ALU.SOLID ELECTROLYTIC CAPACITOR OS-CON - 10SA220M
AP-238.22*.00-01	C	93	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	94	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	95	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	96	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	97	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	98	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.22*.00-01	C	99	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	100	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	101	CE-1000U/10V-64	B3_h	ELKO 1000U 10V 10.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF10VB-1000 10X20 TPA OR WITHOUT TPA
AP-238.22*.00-01	C	102	CE-330U/25V-64	B4_h	ELKO 330U 25V 8.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF25VB-330 8X20 TPA3.5 OR WITHOUT TPA
AP-238.22*.00-01	C	103	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	104	CM-1U/50V-15	F6_h	MEKO 1U 50V 10% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 CC 4100 191/201 K
AP-238.22*.00-01	C	106	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	107	CV-22N/63V-C2		SMD-VIELKO 22N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 22NF/63V X7R 10% - 2222 581 16632
AP-238.22*.00-01	C	108	CM-1U/50V-15	F5_h	MEKO 1U 50V 10% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 CC 4100 191/201 K
AP-238.22*.00-01	C	110	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.22*.00-01	C	111	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	112	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	113	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	114	CV-47N/200V-10	B1_v	VIELKO 47N 200V 10% X7R C330	KEMET	CERAMIC MULTILAYER CAPACITOR C330C473K2R5CA TAPED
AP-238.22*.00-01	C	115	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	116	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.22*.00-01	C	117	CE-330U/25V-64	D2_h	ELKO 330U 25V 8.5X21 LXF	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR LXF25VB-330 8X20 TPA3.5 OR WITHOUT TPA
AP-238.22*.00-01	C	119	CV-47N/63V-C2		SMD-VIELKO 47N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 47NF/63V X7R 10% - 2222 581 16636
AP-238.22*.00-01	D	1	D-4001BCM-C2		SMD-NOR 2INP 4-FACH SO14	NATIONAL SEMICOND.	QUAD 2-INPUT NOR CD4001BCM
AP-238.22*.00-01	D	2	D-4093BCM-C2		SMD-NAND SCH.TRIG 2INP 4-FACH SO14	NATIONAL SEMICOND.	QUAD 2-INPUT NAND SCHMITT TRIGGER CD4093BCM
AP-238.22*.00-01	D	3	D-4093BCM-C2		SMD-NAND SCH.TRIG 2INP 4-FACH SO14	NATIONAL SEMICOND.	QUAD 2-INPUT NAND SCHMITT TRIGGER CD4093BCM
AP-238.22*.00-01	E	1	AP-238.222.00-01		SMDM-BLP SEKUNDÄR	PULS MÜNCHEN	
AP-238.22*.00-01	E	1	AP-238.223.00-01	F6_h	SMDM-ALP SEKUNDÄR	PULS MÜNCHEN	
AP-238.22*.00-01	E	1	AP-238.224.00-10		SMDM-WLP SEKUNDÄR	WALTER	
AP-238.22*.00-01	E	1	EP-238.225.00-10		SMDM-LP 238X133X1.6 70U 2LAG	WALTER	
AP-238.22*.00-01	E	5	ES-RM406-82	E2_h	DRAHTBRÜCKE RM40.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM40.6 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	6	ES-STEZU4-10		STECKZUNGE 6.3X0.8 STEH/GER 2PIN	VOGT AG SCHWEIZ	TAB FLAT 6.3X0.8 - 03866A BZ SN OR MS SN
AP-238.22*.00-01	E	7	ES-STEZU4-10		STECKZUNGE 6.3X0.8 STEH/GER 2PIN	VOGT AG SCHWEIZ	TAB FLAT 6.3X0.8 - 03866A BZ SN OR MS SN
AP-238.22*.00-01	E	28	WI-238.880.00-10	J5_h	KABEL BL 0.86QMM STEHU4 80MM ELH	MD ELEKTRONIK	
AP-238.22*.00-01	E	29	WI-238.880.00-10		KABEL BL 0.86QMM STEHU4 80MM ELH	MD ELEKTRONIK	
AP-238.22*.00-01	E	30	ES-STEZU4-10		STECKZUNGE 6.3X0.8 STEH/GER 2PIN	VOGT AG SCHWEIZ	TAB FLAT 6.3X0.8 - 03866A BZ SN OR MS SN
AP-238.22*.00-01	E	31	ES-STEZU4-10		STECKZUNGE 6.3X0.8 STEH/GER 2PIN	VOGT AG SCHWEIZ	TAB FLAT 6.3X0.8 - 03866A BZ SN OR MS SN
AP-238.22*.00-01	E	32	ES-RM254-82	C2_h	DRAHTBRÜCKE RM25.4 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM25.4 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	33	ES-RM406-82	E2_h	DRAHTBRÜCKE RM40.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM40.6 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	34	ES-RM254-82	C2_h	DRAHTBRÜCKE RM25.4 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM25.4 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	35	ES-RM152-10	B3_h	OR-BRÜCKE RM15.2 OR010 2A5 Z25	ASJ ELECTRONICS	OR-RESISTOR Z25 TAPED
AP-238.22*.00-01	E	36	ES-RM406-82	C4_h	DRAHTBRÜCKE RM40.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM40.6 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	37	ES-RM254-82	D4_v	DRAHTBRÜCKE RM25.4 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM25.4 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	38	ES-RM406-82	C4_h	DRAHTBRÜCKE RM40.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM40.6 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	39	ES-RM203-72	C5_h	DRAHTBRÜCKE RM20.3 DM1.0 ISOLIERT	HÜTTLINGER	WIRE JUMPER RM20.3 DM1.0 SL2.9(AB BT-UK) INSULATION PVC105C - 17083
AP-238.22*.00-01	E	40	ES-RM254-82	D4_v	DRAHTBRÜCKE RM25.4 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM25.4 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	41	ES-RM203-72	D4_v	DRAHTBRÜCKE RM20.3 DM1.0 ISOLIERT	HÜTTLINGER	WIRE JUMPER RM20.3 DM1.0 SL2.9(AB BT-UK) INSULATION PVC105C - 17083
AP-238.22*.00-01	E	44	ES-RM305-82	E3_h	DRAHTBRÜCKE RM30.5 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM30.5 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	45	ES-RM406-82	F3_h	DRAHTBRÜCKE RM40.6 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM40.6 X 4 X 1.00MM INSULATED
AP-238.22*.00-01	E	46	ES-RM102-10	F3_h	OR-BRÜCKE RM10.2 OR010 2A5 Z25	ASJ ELECTRONICS	OR-RESISTOR Z25 TAPED
AP-238.22*.00-01	E	47	ES-RM102-10	F4_v	OR-BRÜCKE RM10.2 OR010 2A5 Z25	ASJ ELECTRONICS	OR-RESISTOR Z25 TAPED
AP-238.22*.00-01	E	48	EW-238.990.00-10		SCHIRMBLECH	ROHDE & SCHWARZ	
AP-238.22*.00-01	E	49	ES-RM102-30	C2_h	DRAHTBRÜCKE RM10.2 DM0.71 BLANK	POLYTRONIK	WIRE DM0.71 TAPED D=65MM - 7530102
AP-238.22*.00-01	E	50	ES-RM102-30	C2_h	DRAHTBRÜCKE RM10.2 DM0.71 BLANK	POLYTRONIK	WIRE DM0.71 TAPED D=65MM - 7530102
AP-238.22*.00-01	E	51	ES-RM152-8A	A4_h	DRAHTBRÜCKE RM15.2 DM1.0 ISOLIERT	BAYKRA	WIRE JUMPER RM15.2 X SL2.9(AB BT-UK) X DM1.00 INSULATED PVC105C
AP-238.22*.00-01	F	2	FV-S14K320-10	J6_v	VARISTOR 320V/420V 0W6 16.5X6.3	SIEMENS	ZNO-VARISTOR SIOV S14K320 - Q69-X4327
AP-238.22*.00-01	K	1	K-A/12V/8A-40	H2_h	REL 1XAK 12V/480R 8A 20X11X10	NATIONAL MATSUSHITA	RELAY DSP1A-12V
AP-238.22*.00-01	K	2	K-U/13V/16A-1A	I3_v	REL 1XUM 12V5/170R 16A 29X13X25	FEME	RELAY MZP A 001 44 16 / TU125C
AP-238.22*.00-01	L	19	LB-192.530.01-10	A5_v	STABKERNDROSSEL 3UH 4A5 4X13.3	HAGN	
AP-238.22*.00-01	L	20	LB-3U9/A85-10	F5_v	HF-DROSSEL 3U9H 0A85 4X9.2 B78108	SIEMENS	HF-CHOKE 3.9UH 0.85A - B78108-S1392-K
AP-238.22*.00-01	L	21	LB-192.530.01-10	B5_v	STABKERNDROSSEL 3UH 4A5 4X13.3	HAGN	
AP-238.22*.00-01	L	22	LE-238.570.00-10	D4_v	EF16-DROSSEL 7UH 5A	BHR-ELEKTRONIK	
AP-238.22*.00-01	L	23	LE-238.570.00-10	B4_v	EF16-DROSSEL 7UH 5A	BHR-ELEKTRONIK	
AP-238.22*.00-01	L	24	LE-238.540.00-20	B2_v	ETD24-DROSSEL 13UH 10A	EGSTON	
AP-238.22*.00-01	L	25	LB-192.540.00-10	B2_h	STABKERNDROSSEL 500NH 14A 4X13.3	HAGN	
AP-238.22*.00-01	L	26	LB-192.540.00-10	D2_h	STABKERNDROSSEL 500NH 14A 4X13.3	HAGN	
AP-238.22*.00-01	L	27	EM-D1-10		F-DÄMPFUNGSPERLE 3.5X3	PHILIPS COMPONENTS	SCREENING BEAD 3.5X3.0 FXC3B1 - 4312 020 31051
AP-238.22*.00-01	L	28	LB-150U/A28-10	C5_h	HF-DROSSEL 150UH 0A28 4X9.2 B78108	SIEMENS	HF-CHOKE 150UH 0.28A - B78108-S1154-J
AP-238.22*.00-01	L	29	LE-238.570.00-20	A4_v	EF16-DROSSEL 7UH 5A	EGSTON	
AP-238.22*.00-01	L	30	LB-3U9/A85-10	G2_h	HF-DROSSEL 3U9H 0A85 4X9.2 B78108	SIEMENS	HF-CHOKE 3.9UH 0.85A - B78108-S1392-K
AP-238.22*.00-01	L	31	LB-192.540.00-10	D2_v	STABKERNDROSSEL 500NH 14A 4X13.3	HAGN	
AP-238.22*.00-01	L	32	WI-238.880.00-10		KABEL BL 0.86QMM STEHU4 80MM ELH	MD ELEKTRONIK	
AP-238.22*.00-01	N	13	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	14	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	15	N-431CLP-10	G2_h	SPG.REF 2V495 0A1 2.2% TO92	MOTOROLA	VOLTAGE REFERENCE TL431CLPRA

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.22*.00-01	N	16	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	17	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	18	N-431CLP-10	E6_v	SPG.REF 2V495 0A1 2.2% TO92	MOTOROLA	VOLTAGE REFERENCE TL431CLPRA
AP-238.22*.00-01	N	19	N-431CLP-10	E6_v	SPG.REF 2V495 0A1 2.2% TO92	MOTOROLA	VOLTAGE REFERENCE TL431CLPRA
AP-238.22*.00-01	N	20	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	21	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	22	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	23	N-358M-C2		SMD-OPAMP 2-FACH 32V 7MV 10MA SO8	NATIONAL SEMICOND.	DUAL OPERATIONAL AMPLIFIER LM358M
AP-238.22*.00-01	N	24	N-393D-C1		SMD-KOMP 2-FACH 36V 5MV 6MA SO14	MOTOROLA	DUAL COMPARATOR LM393D
AP-238.22*.00-01	N	25	N-324D-C1		SMD-OPAMP 4-FACH 32V 7MV 10MA SO14	MOTOROLA	QUAD OPERATIONAL AMPLIFIER LM324D
AP-238.22*.00-01	N	26	N-C555CN-20	E6_h	C-MOS TIMER 1-FACH 15V DIP8	NATIONAL SEMICOND.	C-MOS-TIMER LMC555CN
AP-238.22*.00-01	R	75	RW-39R/5W-A1	I5_v	DRAHTWID 39R 5% 5.0W +TK120 A1	MODULOHM	WIRE-WOUND RESISTOR 39R-5W-A1
AP-238.22*.00-01	R	76	RW-0R15/2W-70	I4_v	M-BANDWID 0R15 10% 2.0W TK200 MPC70	FAB.FUKUSHIMA FUTUBA	METAL-FOIL RESISTOR MPC70 0.150R
AP-238.22*.00-01	R	77	RW-75K/1W-40	I4_v	M-OXIDWID 75K 5% 1.0W TK200 WK4	ROEDERSTEIN	METALOXIDE RESISTOR WK4 075K J B
AP-238.22*.00-01	R	78	RW-75K/1W-40	J4_v	M-OXIDWID 75K 5% 1.0W TK200 WK4	ROEDERSTEIN	METALOXIDE RESISTOR WK4 075K J B
AP-238.22*.00-01	R	79	RW-0R15/2W-70	J4_v	M-BANDWID 0R15 10% 2.0W TK200 MPC70	FAB.FUKUSHIMA FUTUBA	METAL-FOIL RESISTOR MPC70 0.150R
AP-238.22*.00-01	R	81	RM-121K0-10	I5_h	MET.WID 121K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 121K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	82	RM-121K0-10	I4_v	MET.WID 121K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 121K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	179	RM-22R6-10	G3_h	MET.WID 22R6 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 22R6 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	180	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	181	RM-100R0-10	G3_h	MET.WID 100R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 100R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	182	RM-237R0-C1		SMD-METWID 237R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 237R
AP-238.22*.00-01	R	183	RM-169R0-C1		SMD-METWID 169R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 169R
AP-238.22*.00-01	R	184	RT-100K-20	F5_h	MESS-NTC 100K 10% 0W75 K164	SIEMENS	NTC K164/10%/100K - B57164-K104-K TAPED OR UNTAPED
AP-238.22*.00-01	R	185	RT-100K-20	D3_h	MESS-NTC 100K 10% 0W75 K164	SIEMENS	NTC K164/10%/100K - B57164-K104-K TAPED OR UNTAPED
AP-238.22*.00-01	R	186	RM-6K49-C1		SMD-METWID 6K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K49
AP-238.22*.00-01	R	187	RM-100R0-10	B6_v	MET.WID 100R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 100R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	188	RM-100R0-10	B6_v	MET.WID 100R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 100R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	189	RM-6K49-C1		SMD-METWID 6K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K49
AP-238.22*.00-01	R	190	RM-51K1-10	A6_h	MET.WID 51K1 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 51K1 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	191	RM-5K23-C2		SMD-METWID 5K23 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 5K23
AP-238.22*.00-01	R	192	RM-6K49-C2		SMD-METWID 6K49 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 6K49
AP-238.22*.00-01	R	193	RW-0R032-D6	B4_v	WIDERST.DRAHT 0R032 0.6X15.24	HÜTTLINGER	ZERO OHM RESISTOR DM0.6 RM15.24 SL=4.2 - 15002
AP-238.22*.00-01	R	194	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	195	RM-5K23-C2		SMD-METWID 5K23 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 5K23
AP-238.22*.00-01	R	196	RM-6K49-C2		SMD-METWID 6K49 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 6K49
AP-238.22*.00-01	R	197	RM-1R50-10	F4_v	MET.WID 1R50 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R50 1% TK100 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	198	RM-1K00-10	F4_v	MET.WID 1K00 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 1K00 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	199	RM-147R0-C1		SMD-METWID 147R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 147R
AP-238.22*.00-01	R	200	RW-0R074-D4	E4_v	WIDERST.DRAHT 0R074 0.4X15.24	HÜTTLINGER	ZERO OHM RESISTOR DM0.4 RM15.24 SL=4.1 - 15463
AP-238.22*.00-01	R	201	RM-1R50-10	F4_v	MET.WID 1R50 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R50 1% TK100 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	202	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	203	RM-11K0-C1		SMD-METWID 11K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 11K0
AP-238.22*.00-01	R	204	RM-75K0-C1		SMD-METWID 75K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 75K0
AP-238.22*.00-01	R	205	RM-2M15-C1		SMD-METWID 2M15 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2M15
AP-238.22*.00-01	R	206	RM-100K0-C1		SMD-METWID 100K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100K
AP-238.22*.00-01	R	207	RM-100K0-C1		SMD-METWID 100K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100K
AP-238.22*.00-01	R	208	RM-237R0-C1		SMD-METWID 237R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 237R
AP-238.22*.00-01	R	209	RA-1K0-21	E6_v	TRIMMPOT 1K 10% 15G TYP 3006P	BOURNS	CERMET POTENTIOMETER TYP3006P 1K - 3006P-EX2-102
AP-238.22*.00-01	R	210	RM-2K49-10	E6_v	MET.WID 2K49 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 2K49 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	211	RM-3K16-10	E6_v	MET.WID 3K16 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 3K16 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	212	RM-6K49-C2		SMD-METWID 6K49 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 6K49
AP-238.22*.00-01	R	213	RM-6K49-C2		SMD-METWID 6K49 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 6K49
AP-238.22*.00-01	R	214	RM-5K11-C1		SMD-METWID 5K11 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5K11
AP-238.22*.00-01	R	215	RM-5K11-C1		SMD-METWID 5K11 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5K11
AP-238.22*.00-01	R	216	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	217	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	218	RM-34K8-C1		SMD-METWID 34K8 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 34K8
AP-238.22*.00-01	R	219	RM-464R0-C1		SMD-METWID 464R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 464R
AP-238.22*.00-01	R	220	RM-34K8-C1		SMD-METWID 34K8 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 34K8

Bl. 7+
AI: 01

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.22*.00-01	R	221	RM-332R0-C1		SMD-METWID 332R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 332R
AP-238.22*.00-01	R	222	RM-2K49-C1		SMD-METWID 2K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K49
AP-238.22*.00-01	R	223	RA-1K0-21	E6_v	TRIMMPOT 1K 10% 15G TYP 3006P	BOURNS	CERMET POTENTIOMETER TYP3006P 1K,- 3006P-EX2-102
AP-238.22*.00-01	R	224	RM-2K61-C1		SMD-METWID 2K61 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K61
AP-238.22*.00-01	R	225	RM-2K87-C1		SMD-METWID 2K87 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K87
AP-238.22*.00-01	R	226	RM-51K1-10	B5_v	MET.WID 51K1 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 51K1 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	227	RM-20K5-10	D5_v	MET.WID 20K5 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 20K5 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	228	RM-10K5-C1		SMD-METWID 10K5 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K5
AP-238.22*.00-01	R	229	RM-5K23-C2		SMD-METWID 5K23 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 5K23
AP-238.22*.00-01	R	230	RM-34K8-C2		SMD-METWID 34K8 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 34K8
AP-238.22*.00-01	R	231	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	232	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	233	RM-1R33-10	F5_v	MET.WID 1R33 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R33 1% TK100 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	234	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	235	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	236	RM-5K23-C2		SMD-METWID 5K23 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 5K23
AP-238.22*.00-01	R	237	RM-64K9-C1		SMD-METWID 64K9 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 64K9
AP-238.22*.00-01	R	238	RM-681R0-10	G5_v	MET.WID 681R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 681R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	239	RM-12K1-C1		SMD-METWID 12K1 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 12K1
AP-238.22*.00-01	R	240	RM-2K15-C1		SMD-METWID 2K15 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K15
AP-238.22*.00-01	R	241	RM-16K9-C1		SMD-METWID 16K9 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 16K9
AP-238.22*.00-01	R	242	RM-261R0-10	B4_v	MET.WID 261R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 261R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	243	RW-0R024-D6	B4_v	WIDERST.DRAHT 0R024 0.6X10.16	HÜTTLINGER	ZERO OHM RESISTOR DM0.6 RM10.16 SL=4.2 - 15464
AP-238.22*.00-01	R	244	RM-51K1-10	A5_v	MET.WID 51K1 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 51K1 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	245	RM-16K9-C1		SMD-METWID 16K9 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 16K9
AP-238.22*.00-01	R	246	RM-261R0-10	B5_v	MET.WID 261R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 261R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	247	RM-475K0-10	G5_h	MET.WID 475K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 475K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	248	RM-16K9-C1		SMD-METWID 16K9 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 16K9
AP-238.22*.00-01	R	249	RM-1K05-C1		SMD-METWID 1K05 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K05
AP-238.22*.00-01	R	250	RW-0R012-D1	D3_h	WIDERST.DRAHT 0R012 1.0X15.24	HÜTTLINGER	ZERO OHM RESISTOR DM1.0 RM15.24 SL=3.4 - 16569
AP-238.22*.00-01	R	251	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	252	RM-9K53-C1		SMD-METWID 9K53 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 9K53
AP-238.22*.00-01	R	253	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	254	RM-9K53-C1		SMD-METWID 9K53 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 9K53
AP-238.22*.00-01	R	255	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	256	RM-6K49-C1		SMD-METWID 6K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K49
AP-238.22*.00-01	R	257	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	258	RM-6K49-C1		SMD-METWID 6K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K49
AP-238.22*.00-01	R	259	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	260	RW-0R012-D1	B5_h	WIDERST.DRAHT 0R012 1.0X15.24	HÜTTLINGER	ZERO OHM RESISTOR DM1.0 RM15.24 SL=3.4 - 16569
AP-238.22*.00-01	R	261	RM-154K0-10	C4_h	MET.WID 154K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 154K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	262	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	263	RM-7K50-C1		SMD-METWID 7K50 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 7K50
AP-238.22*.00-01	R	264	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	265	RW-0R005/2W4-L2	B3_h	DRAHTWID 0R005 1% 2.4W +TK300 LVR3	DALE	WIRE-WOUND RESISTOR LVR-3 0.005R 1%
AP-238.22*.00-01	R	266	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	267	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	268	RM-36K5-C1		SMD-METWID 36K5 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 36K5
AP-238.22*.00-01	R	269	RM-10K0-10	C3_h	MET.WID 10K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 10K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	270	RM-7K50-10	C3_v	MET.WID 7K50 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 7K50 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	271	RM-10K0-10	C4_v	MET.WID 10K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 10K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	272	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	273	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	274	RM-3R48-C1		SMD-METWID 3R48 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3R48
AP-238.22*.00-01	R	275	RM-3R48-C1		SMD-METWID 3R48 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3R48
AP-238.22*.00-01	R	276	RM-5K11-10	C3_v	MET.WID 5K11 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 5K11 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	277	RM-100K0-C1		SMD-METWID 100K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100K
AP-238.22*.00-01	R	278	RM-2K15-C1		SMD-METWID 2K15 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K15
AP-238.22*.00-01	R	279	RM-19K6-C1		SMD-METWID 19K6 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 19K6
AP-238.22*.00-01	R	280	RM-19K6-C1		SMD-METWID 19K6 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 19K6

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.22*.00-01	R	281	RM-750R0-10	E5_v	MET.WID 750R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 750R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	282	RM-3R16-C1		SMD-METWID 3R16 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3R16
AP-238.22*.00-01	R	283	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	284	RM-332R0-C1		SMD-METWID 332R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 332R
AP-238.22*.00-01	R	285	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	286	RM-3R48-C1		SMD-METWID 3R48 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3R48
AP-238.22*.00-01	R	287	RM-3R48-C1		SMD-METWID 3R48 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3R48
AP-238.22*.00-01	R	288	RM-1K62-10	C2_v	MET.WID 1K62 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 1K62 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	289	RM-4R75-10	C2_v	MET.WID 4R75 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 4R75 1% TK100 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	290	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	291	RM-15R0-10	C3_v	MET.WID 15R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 15R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	292	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	299	RM-3R16-C1		SMD-METWID 3R16 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3R16
AP-238.22*.00-01	R	300	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	301	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	302	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	303	RM-511K0-10	I5_v	MET.WID 511K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 511K0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	304	RM-750R0-C1		SMD-METWID 750R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 750R
AP-238.22*.00-01	R	305	RM-316R0-C1		SMD-METWID 316R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 316R
AP-238.22*.00-01	R	306	RM-316R0-C1		SMD-METWID 316R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 316R
AP-238.22*.00-01	R	307	RM-1K33-C1		SMD-METWID 1K33 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K33
AP-238.22*.00-01	R	308	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	309	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	310	RM-287K0-C1		SMD-METWID 287K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 287K
AP-238.22*.00-01	R	311	RM-12K1-C1		SMD-METWID 12K1 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 12K1
AP-238.22*.00-01	R	312	RM-133R0-C1		SMD-METWID 133R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 133R
AP-238.22*.00-01	R	313	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	314	RM-2M15-C1		SMD-METWID 2M15 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2M15
AP-238.22*.00-01	R	315	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.22*.00-01	R	316	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.22*.00-01	R	317	RM-105K0-C1		SMD-METWID 105K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 105K
AP-238.22*.00-01	R	318	RM-12K1-C1		SMD-METWID 12K1 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 12K1
AP-238.22*.00-01	R	319	RM-6K81-C1		SMD-METWID 6K81 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K81
AP-238.22*.00-01	R	320	RM-6K81-C1		SMD-METWID 6K81 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K81
AP-238.22*.00-01	R	321	RM-6K81-C1		SMD-METWID 6K81 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 6K81
AP-238.22*.00-01	R	322	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	323	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	324	RM-511K0-C1		SMD-METWID 511K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 511K
AP-238.22*.00-01	R	325	RM-750K0-C1		SMD-METWID 750K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 750K
AP-238.22*.00-01	R	326	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	327	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	328	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.22*.00-01	R	329	RM-5K23-C2		SMD-METWID 5K23 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 5K23
AP-238.22*.00-01	R	330	RM-19K6-C2		SMD-METWID 19K6 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 19K6
AP-238.22*.00-01	R	331	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	332	RM-100R0-C1		SMD-METWID 100R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 100R
AP-238.22*.00-01	R	333	RM-287K0-C1		SMD-METWID 287K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 287K
AP-238.22*.00-01	R	334	RM-1K00-C1		SMD-METWID 1K00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K00
AP-238.22*.00-01	R	335	RM-487K0-C1		SMD-METWID 487K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 487K
AP-238.22*.00-01	R	336	RM-2K15-C1		SMD-METWID 2K15 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K15
AP-238.22*.00-01	R	337	RM-226K0-C1		SMD-METWID 226K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 226K
AP-238.22*.00-01	R	338	RM-2K15-10	E5_v	MET.WID 2K15 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 2K15 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	339	RM-24K9-C1		SMD-METWID 24K9 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 24K9
AP-238.22*.00-01	R	340	RM-237R0-10	E4_v	MET.WID 237R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 237R0 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	341	RM-11K0-C2		SMD-METWID 11K0 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 11K0
AP-238.22*.00-01	R	342	RM-19K6-C2		SMD-METWID 19K6 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 19K6
AP-238.22*.00-01	R	343	RM-6K49-10	G5_v	MET.WID 6K49 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 6K49 1% TK50 300V 0.6W/70C TAPED
AP-238.22*.00-01	R	345	RM-1K69-C1		SMD-METWID 1K69 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K69
AP-238.22*.00-01	R	346	RM-1K69-C1		SMD-METWID 1K69 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K69
AP-238.22*.00-01	R	347	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.22*.00-01	R	348	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.22*.00-01	R	349	RM-2K61-C1		SMD-METWID 2K61 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K61
AP-238.22*.00-01	R	350	RM-3K40-C2		SMD-METWID 3K40 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 3K40
AP-238.22*.00-01	R	351	RM-0R0-C1		SMD-METWID 0R0 MAX.0R02 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204 BL 0R0
AP-238.22*.00-01	R	352	RM-5R62-C1		SMD-METWID 5R62 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5R62
AP-238.22*.00-01	R	353	RM-5R62-C1		SMD-METWID 5R62 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 5R62
AP-238.22*.00-01	R	354	RM-46K4-C1		SMD-METWID 46K4 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 46K4
AP-238.22*.00-01	R	355	RW-100R/W25-90		K-MASSEWID 100R 10% 0.25W CB	ALLEN BRADLEY	HOT-MOLDED RESISTOR CB 1011
AP-238.22*.00-01	R	356	RW-100R/W25-90		K-MASSEWID 100R 10% 0.25W CB	ALLEN BRADLEY	HOT-MOLDED RESISTOR CB 1011
AP-238.22*.00-01	R	357	RW-100R/W25-90		K-MASSEWID 100R 10% 0.25W CB	ALLEN BRADLEY	HOT-MOLDED RESISTOR CB 1011
AP-238.22*.00-01	V	45	VB-KBU6J-10	J5_v	BR-GLEICHR 420VAC/600VDC 6A	GENERAL INSTRUMENTS	BRIDGE RECTIFIER KBU6J
AP-238.22*.00-01	V	93	VT-BC307B-10	G3_v	PNP-TRANS 50V 0A1 0W3 TO92E	ZETEX	PNP-TRANSISTOR BC307BP STOA
AP-238.22*.00-01	V	94	VS-S0325R-19	G2_v	THYRISTOR 30V 25A 30MA TO220	TECCOR	THYRISTOR S0325R
AP-238.22*.00-01	V	95	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	96	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	97	VZ-ZMM16-C1		SMD-Z-DIODE 16V 5% 0W5 0204	ITT	Z-DIODE MINI-MELF ZMM16-SB00014 (TAPED ON REEL "7")
AP-238.22*.00-01	V	98	VT-BD240A-29	E3_v	PNP-TRANS 70V 2A 30W TO220	SGS-THOMSON	PNP-TRANSISTOR BD240A
AP-238.22*.00-01	V	99	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	100	VT-BC546B-10	F4_h	NPN-TRANS 80V 0A1 0W5 TO92E	ZETEX	NPN-TRANSISTOR BC546BP STOA
AP-238.22*.00-01	V	101	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	102	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	103	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	104	VT-BC307B-10	F4_v	PNP-TRANS 50V 0A1 0W3 TO92E	ZETEX	PNP-TRANSISTOR BC307BP STOA
AP-238.22*.00-01	V	105	VM-ZVN2110A-10	H3_v	N-MOSFET 100V 4R 0W7 TO92E	ZETEX	DMOS FET ZVN2110A STOA
AP-238.22*.00-01	V	106	VZ-BZX79B27-13	G3_v	Z-DIODE 27V 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B27 TAPED - 9331 669 70113
AP-238.22*.00-01	V	107	VZ-BZX79B5V6-13	G3_h	Z-DIODE 5V6 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B5V6 TAPED - 9331 668 20113
AP-238.22*.00-01	V	108	VZ-BZX79B9V1-13	F3_h	Z-DIODE 9V1 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B9V1 TAPED - 9331 668 60113
AP-238.22*.00-01	V	109	VZ-BZX79B5V6-13	F3_h	Z-DIODE 5V6 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B5V6 TAPED - 9331 668 20113
AP-238.22*.00-01	V	110	VZ-BZX79B8V2-13	F3_h	Z-DIODE 8V2 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B8V2 TAPED - 9331 668 50113
AP-238.22*.00-01	V	111	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	112	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	113	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	114	VZ-BZX79B18-13	G4_v	Z-DIODE 18V 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B18 TAPED - 9331 669 30113
AP-238.22*.00-01	V	115	VT-BD139/16-19	F5_v	NPN-TRANS 100V 1A5 12W5 TO126	PHILIPS COMPONENTS	NPN-TRANSISTOR BD139-16 - 9332 6975 0127
AP-238.22*.00-01	V	116	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	117	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	118	VZ-ZMM16-C1		SMD-Z-DIODE 16V 5% 0W5 0204	ITT	Z-DIODE MINI-MELF ZMM16-SB00014 (TAPED ON REEL "7")
AP-238.22*.00-01	V	119	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	120	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	121	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	122	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	123	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	124	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	125	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	126	VT-ZTX750-10	C2_h	PNP-TRANS 60V 2A 1W TO92E	ZETEX	PNP-TRANSISTOR ZTX750 STOA OR ZTX750 STZA
AP-238.22*.00-01	V	127	VT-ZTX650-10	C2_h	NPN-TRANS 60V 2A 1W TO92E	ZETEX	NPN-TRANSISTOR ZTX650 STOA OR ZTX650 STZA
AP-238.22*.00-01	V	128	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	129	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	130	VD-SB140-10	A1_h	SCHOTTKY 40V 1A 0V5 DO41	GENERAL INSTRUMENTS	SCHOTTKY DIODE SB140 TAPED
AP-238.22*.00-01	V	131	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	132	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	133	VD-BAS21-C1		SMD-DIODE 250V 0A2 SOT23	SIEMENS	RECTIFIER DIODE BAS21 - Q62702-A79 (TAPE:E6327)
AP-238.22*.00-01	V	134	VD-BAS21-C1		SMD-DIODE 250V 0A2 SOT23	SIEMENS	RECTIFIER DIODE BAS21 - Q62702-A79 (TAPE:E6327)
AP-238.22*.00-01	V	135	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	136	VM-IRFZ44-1E		N-MOSFET 60V 0R028 150W TO220	INTERNAT.RECTIFIER	HEXFET IRFZ44
AP-238.22*.00-01	V	137	VD-SB140-10	B1_h	SCHOTTKY 40V 1A 0V5 DO41	GENERAL INSTRUMENTS	SCHOTTKY DIODE SB140 TAPED
AP-238.22*.00-01	V	138	VT-ZTX750-10	C2_h	PNP-TRANS 60V 2A 1W TO92E	ZETEX	PNP-TRANSISTOR ZTX750 STOA OR ZTX750 STZA
AP-238.22*.00-01	V	139	VT-ZTX650-10	C2_h	NPN-TRANS 60V 2A 1W TO92E	ZETEX	NPN-TRANSISTOR ZTX650 STOA OR ZTX650 STZA
AP-238.22*.00-01	V	140	VT-ZTX650-10	C2_h	NPN-TRANS 60V 2A 1W TO92E	ZETEX	NPN-TRANSISTOR ZTX650 STOA OR ZTX650 STZA
AP-238.22*.00-01	V	141	VZ-ZMM5V6-C1		SMD-Z-DIODE 5V6 5% 0W5 0204	ITT	Z-DIODE MINI-MELF ZMM5V6-SB00014 (TAPED ON REEL "7")

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.22*.00-01	V	142	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.22*.00-01	V	143	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	144	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	145	VT-BC307B-10	C2_h	PNP-TRANS 50V 0A1 0W3 TO92E	ZETEX	PNP-TRANSISTOR BC307BP STOA
AP-238.22*.00-01	V	146	VZ-ZMM16-C1		SMD-Z-DIODE 16V 5% 0W5 0204	ITT	Z-DIODE MINI-MELF ZMM16-SB00014 (TAPED ON REEL "7")
AP-238.22*.00-01	V	147	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	149	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	150	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	151	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	152	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	153	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	154	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	155	VT-BC856B-C1		SMD-PNP-TRANS 80V 0A1 0W2 SOT23	PHILIPS COMPONENTS	PNP-TRANSISTOR BC856B SOT23 - 9335 897 30215 (REEL 7")
AP-238.22*.00-01	V	156	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	157	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	158	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	159	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	160	VT-BC856B-C1		SMD-PNP-TRANS 80V 0A1 0W2 SOT23	PHILIPS COMPONENTS	PNP-TRANSISTOR BC856B SOT23 - 9335 897 30215 (REEL 7")
AP-238.22*.00-01	V	161	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	V	162	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.22*.00-01	W	2	WR-238.760.00-10	C4_h	FLACHBANDKABEL KONFEKTIONIERT 16-POL.	MD ELEKTRONIK	
AP-238.22*.00-01	X	3	XF-SUBD50E-F8		SUBD-STECKVERB 50POL EINPRESS 250V	FCT	D-SUB CONNECTOR NO.2/DIN41652 50PIN - F50S9-K49
AP-238.22*.00-01	X	4	XM-1X7G-J8	B5_v	ST.LEISTE 1X7P GER RM3.96 7A SN 11	JST DEUTSCHLAND	PIN HEADER VS 7PIN - B7P-VS
AP-238.22*.00-01	X	5	XM-1X8G-R9	D4_v	ST.LEISTE 1X8P GER RM2.54 3A AU 6.8	RATIOPLAST	PIN HEADER SERIES 010 1X8P 0.63X0.63 - 010 02 25 112 008
AP-238.22*.00-01	X	8	XM-1X5G-R9	H4_v	ST.LEISTE 1X5P GER RM2.54 3A AU 6.8	RATIOPLAST	PIN HEADER SERIES 010 1X5P 0.63X0.63 - 010 02 25 112 005
AP-238.23*.00-01	C	1	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.23*.00-01	C	2	CV-220P/63V-C1		SMD-VIELKO 220P 63V 5% NP0 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220PF/63V NP0 5% - 2222 863 15221
AP-238.23*.00-01	C	3	CV-47N/63V-C2		SMD-VIELKO 47N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 47NF/63V X7R 10% - 2222 581 16636
AP-238.23*.00-01	C	4	CV-220N/63V-C3		SMD-VIELKO 220N 63V 10% X7R 1210	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220NF/63V X7R 10% - 2222 582 16645
AP-238.23*.00-01	C	5	CV-10N/63V-C2		SMD-VIELKO 10N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 10NF/63V X7R 10% - 2222 581 16627
AP-238.23*.00-01	C	6	CV-220N/63V-C3		SMD-VIELKO 220N 63V 10% X7R 1210	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220NF/63V X7R 10% - 2222 582 16645
AP-238.23*.00-01	C	7	CV-220N/63V-C3		SMD-VIELKO 220N 63V 10% X7R 1210	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 220NF/63V X7R 10% - 2222 582 16645
AP-238.23*.00-01	C	8	CV-100N/63V-C2		SMD-VIELKO 100N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 100NF/63V X7R 10% - 2222 581 16641
AP-238.23*.00-01	C	9	CV-1N/63V-C2		SMD-VIELKO 1N 63V 10% X7R 1206	PHILIPS COMPONENTS	CERAM. MULTILAYER CHIP CAPACITOR 1NF/63V X7R 10% - 2222 581 16614
AP-238.23*.00-01	E	1	EP-238.235.00-10		SMDM-LP 47X 46X1.6 35U ZLAG	WALTER	
AP-238.23*.00-01	N	1	N-339D-C1		SMD-KOMP 4-FACH 36V 5MV 6MA SO14	MOTOROLA	QUAD COMPARATOR LM339D
AP-238.23*.00-01	N	2	N-339D-C1		SMD-KOMP 4-FACH 36V 5MV 6MA SO14	MOTOROLA	QUAD COMPARATOR LM339D
AP-238.23*.00-01	R	2	RM-1M00-C1		SMD-METWID 1M00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1M00
AP-238.23*.00-01	R	3	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.23*.00-01	R	4	RM-4K75-C1		SMD-METWID 4K75 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K75
AP-238.23*.00-01	R	5	RM-1M00-C1		SMD-METWID 1M00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1M00
AP-238.23*.00-01	R	6	RM-115R0-C1		SMD-METWID 115R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 115R
AP-238.23*.00-01	R	8	RM-2K49-C1		SMD-METWID 2K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K49
AP-238.23*.00-01	R	9	RM-4K64-C1		SMD-METWID 4K64 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K64
AP-238.23*.00-01	R	10	RM-22K6-C1		SMD-METWID 22K6 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 22K6
AP-238.23*.00-01	R	11	RM-3K32-C1		SMD-METWID 3K32 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 3K32
AP-238.23*.00-01	R	12	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.23*.00-01	R	13	RM-1K54-C1		SMD-METWID 1K54 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1K54
AP-238.23*.00-01	R	14	RM-22K6-C1		SMD-METWID 22K6 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 22K6
AP-238.23*.00-01	R	15	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.23*.00-01	R	16	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.23*.00-01	R	17	RM-27K4-C1		SMD-METWID 27K4 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 27K4
AP-238.23*.00-01	R	18	RM-1M00-C1		SMD-METWID 1M00 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 1M00
AP-238.23*.00-01	R	19	RM-511K0-10	A2_v	MET.WID 511K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 511K0 1% TK50 300V 0.6W/70C TAPED
AP-238.23*.00-01	R	20	RM-2K49-C1		SMD-METWID 2K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K49
AP-238.23*.00-01	R	21	RM-4K22-C1		SMD-METWID 4K22 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 4K22
AP-238.23*.00-01	R	22	RM-11K5-C2		SMD-METWID 11K5 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 11K5
AP-238.23*.00-01	R	23	RM-13K3-C1		SMD-METWID 13K3 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 13K3
AP-238.23*.00-01	R	24	RM-2K49-C1		SMD-METWID 2K49 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 2K49
AP-238.23*.00-01	R	27	RM-12K7-C2		SMD-METWID 12K7 0.25% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 0.25% BL 12K7

Bl. 11+
AI: 01

SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.23*.00-01	R	28	RM-10K0-C1		SMD-METWID 10K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10K0
AP-238.23*.00-01	R	29	RM-287K0-C1		SMD-METWID 287K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 287K
AP-238.23*.00-01	R	30	RM-226K0-C1		SMD-METWID 226K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 226K
AP-238.23*.00-01	R	31	RM-287K0-C1		SMD-METWID 287K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 287K
AP-238.23*.00-01	R	32	RM-226K0-C1		SMD-METWID 226K0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 226K
AP-238.23*.00-01	R	33	RM-10R0-C1		SMD-METWID 10R0 1% W25 TK50 0204	BEYSCHLAG	METAL FILM RESISTOR MINI-MELF MMA0204-50 1% BL 10R0
AP-238.23*.00-01	V	1	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.23*.00-01	V	4	VZ-BZX79B5V6-13	A1_h	Z-DIODE 5V6 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B5V6 TAPED - 9331 668 20113
AP-238.23*.00-01	V	5	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	6	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	8	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	9	VZ-BZX79B9V1-13	B2_v	Z-DIODE 9V1 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B9V1 TAPED - 9331 668 60113
AP-238.23*.00-01	V	11	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	12	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	13	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	15	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.23*.00-01	V	16	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.23*.00-01	V	17	VD-LL101A-C1		SMD-SCHOTTKY 60V 0A01 0V41 0204	ITT	SCHOTTKY DIODE MINI-MELF LL101A-TAPE
AP-238.23*.00-01	V	18	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.23*.00-01	V	19	VD-LL4148-C1		SMD-DIODE 75V 0A15 4NS 0204	ITT	RECTIFIER DIODE MINI-MELF LL4148-SB00014
AP-238.23*.00-01	V	20	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.23*.00-01	V	21	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.23*.00-01	V	22	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.23*.00-01	V	23	VT-BC846B-C1		SMD-NPN-TRANS 80V 0A1 0W3 SOT23	PHILIPS COMPONENTS	NPN-TRANSISTOR BC846B SOT23 - 9335 895 60215 (REEL 7")
AP-238.23*.00-01	V	24	VD-D1F60-C1		SMD-DIODE 600V 0A75 CHIP	SHINDENGEN	RECTIFIER DIODE CHIP D1F60 TAPED (D<=25)
AP-238.23*.00-01	X	3	XF-1X8L-90	B2_h	BUCHSENLEISTE 1X8P LÖTPIN 3A	MOLEX	FEMALE CONNECTOR SERIES 90148 8POL 2.54 HORIZ. - 90148-1208
AP-238.23*.00-01	X	4	XF-1X5L-90	A1_h	BUCHSENLEISTE 1X5P LÖTPIN 3A	MOLEX	FEMALE CONNECTOR SERIES 90148 5POL 2.54 HORIZ. - 90148-1205
AP-238.24*.00-01	1	0	AP-238.243.00-01	A2_h	BLP SEKUNDÄRMODUL 1	PULS MÜNCHEN	
AP-238.24*.00-01	C	1	CE-100U/50V-65	B1_v	ELKO 100U 50V 10.5X16 SXE	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR SXE 50 VB-100 10X15 TPA OR WITHOUT TPA
AP-238.24*.00-01	C	2	CE-100U/50V-65	C2_v	ELKO 100U 50V 10.5X16 SXE	NIPPON CHEMICON	ELECTROLYTIC CAPACITOR SXE 50 VB-100 10X15 TPA OR WITHOUT TPA
AP-238.24*.00-01	C	3	CM-100N/63V-20	A2_h	MEKO 100N 63V 20% MKT1.85	ARCOTRONICS	METALL. POLYESTER FILM CAPACITOR R.85 DC 3100 191/201 M
AP-238.24*.00-01	C	4	CK-220P/100V-15	C2_v	KERKO 220P 100V 10% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 K2000 220P 10% 100V TAPED - 2222 630 53221
AP-238.24*.00-01	C	5	CK-220P/100V-16	C1_v	KERKO 220P 100V 10% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM2.5 K2000 220P 10% 100V TAPED - 2222 630 51221
AP-238.24*.00-01	C	8	CK-68P/100V-10	C2_h	KERKO 68P 100V 2% EGPU	PHILIPS COMPONENTS	DISC CAPACITOR EGPU RM5 NP0 68P 2% 100V TAPED - 2222 679 10689
AP-238.24*.00-01	E	1	EP-238.245.00-10	B3_h	LEITERPLATTE 70X 48X1.6 35U 2LAG	WALTER	
AP-238.24*.00-01	L	4	LE-238.560.00-20	B2_v	EF20-DROSSEL 1M9H 0A6	EGSTON	
AP-238.24*.00-01	N	3	N-392N-10	C2_h	OPKOMP 1-FACH 32V 5MV 10MA DIP8	NATIONAL SEMICOND.	OPERATIONAL AMPLIFIER / VOLTAGE COMPARATOR LM392N
AP-238.24*.00-01	R	1	RM-178R0-10	B2_h	MET.WID 178R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 178R0 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	2	RM-475K0-10	C2_v	MET.WID 475K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 475K0 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	3	RM-19K6-10	A2_v	MET.WID 19K6 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 19K6 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	4	RM-5K23-65	A2_v	MET.WID 5K23 0.25% 0.6W TK50 MBB	BEYSCHLAG	METAL FILM RESISTOR MBB0207-50/0.25%/5K23/0.6W
AP-238.24*.00-01	R	5	RM-18K7-10	A2_v	MET.WID 18K7 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 18K7 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	6	RM-1R00-10	C2_v	MET.WID 1R00 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R00 1% TK100 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	7	RM-1R00-10	C1_v	MET.WID 1R00 1% 0.6W TK100 300V		METAL FILM RESISTOR DIN0207 1R00 1% TK100 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	8	RM-1K00-10	C1_h	MET.WID 1K00 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 1K00 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	9	RM-10K0-10	A2_v	MET.WID 10K0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 10K0 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	10	RM-274R0-10	B2_h	MET.WID 274R0 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 274R0 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	11	RM-1K00-10	C1_h	MET.WID 1K00 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 1K00 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	13	RM-51K1-10	C2_v	MET.WID 51K1 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 51K1 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	14	RM-1K00-10	B2_h	MET.WID 1K00 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 1K00 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	16	RM-12K7-10	C2_v	MET.WID 12K7 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 12K7 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	17	RM-64K9-10	C2_h	MET.WID 64K9 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 64K9 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	R	18	RM-1K00-10	B2_h	MET.WID 1K00 1% 0.6W TK50 300V		METAL FILM RESISTOR DIN0207 1K00 1% TK50 300V 0.6W/70C TAPED
AP-238.24*.00-01	V	1	VT-ZTX750-10	B2_h	PNP-TRANS 60V 2A 1W TO92E	ZETEX	PNP-TRANSISTOR ZTX750 STOA OR ZTX750 STZA
AP-238.24*.00-01	V	2	VD-BYS21/45-10	B2_v	SCHOTTKY 45V 1A 0V55 3X5	SIEMENS	SCHOTTKY DIODE BYS21-45 TAPED
AP-238.24*.00-01	V	3	VZ-BZX79B5V6-13	A2_v	Z-DIODE 5V6 2% 0W5 DO35	PHILIPS COMPONENTS	Z-DIODE BZX79B5V6 TAPED - 9331 668 20113
AP-238.24*.00-01	V	4	VT-BC546B-10	B2_h	NPN-TRANS 80V 0A1 0W5 TO92E	ZETEX	NPN-TRANSISTOR BC546BP STOA
AP-238.24*.00-01	V	6	VD-BAT43-10	C2_v	SCHOTTKY 30V 0A2 1V DO35	SGS-THOMSON	SCHOTTKY DIODE BAT 43 TAPED
AP-238.24*.00-01	X	2	XF-1X8L-90	A2_h	BUCHSENLEISTE 1X8P LÖTPIN 3A	MOLEX	FEMALE CONNECTOR SERIES 90148 8POL 2.54 HORIZ. - 90148-1208
AP-238.490.00-01	C	1	CY-470P/400V-95		Y-KOPPL 470P 400V 20% WKP	ROEDERSTEIN	CERAMIC DISC CAPACITOR CLASS Y WKP600 470P 400V 20% - WKP471MCPEFOK

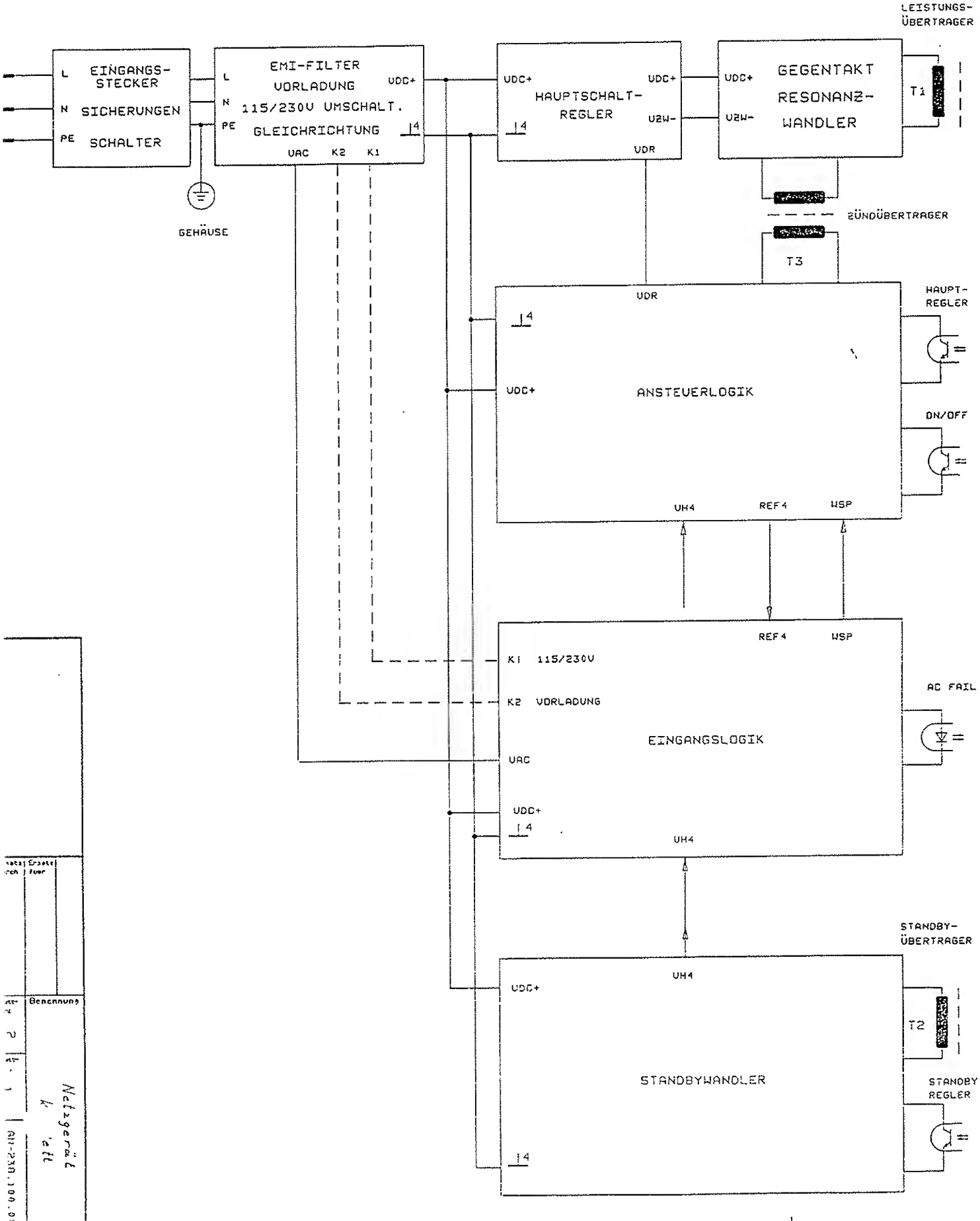
SUBASSEMBLY	P	OS	PARTNUMBER	PLAN	DESCRIPTION	MANUFACTURER	ORDERCODE
AP-238.490.00-01	C	2	CY-470P/400V-95		Y-KOPPL 470P 400V 20% WKP	ROEDERSTEIN	CERAMIC DISC CAPACITOR CLASS Y WKP600 470P 400V 20% - WKP471MCPEFOK
AP-238.490.00-01	E	1	WI-238.792.02-10		KABEL SW 0.86QMM STEHU4 120MM ELH	MD ELEKTRONIK	
AP-238.490.00-01	E	2	WI-238.792.02-10		KABEL SW 0.86QMM STEHU4 120MM ELH	MD ELEKTRONIK	
AP-238.490.00-01	E	3	EP-238.495.00-10		LEITERPLATTE 170X 64X1.6 35U 2LAG	WALTER	
AP-238.490.00-01	L	1	EM-D2-10		F-DÄMPFUNGSPERLE 3.5X7.5	PHILIPS COMPONENTS	SCREENING BEAD 3.5X7.5 FXC381 - 4312 020 31331
AP-238.490.00-01	R	1	RK-100R-10		KOHLE.WID 100R 5% 0.33W -TK300 CR25	PHILIPS COMPONENTS	CARBON FILM RESISTOR CR25 100R TAPED - 2322 211 73101
xy-238.790.00-01	1	0	XY-GS10FD/SS-80		GERÄTEEINB.STECK+FD+SS 250V/10A LÖ+ST	OTTO HEIL	COMPACT-CONNECTOR PART-NO. 6765.01.1802.1102
XY-238.790.00-01	5	0	FD-T6A3-10		G-SICH T 6A3 1500A 5X20 IEC127/2/5		FUSE LINK IEC127/2 BL.5 6.3A
ya-238.770.00-10	1	0	YA-12VDC/Q15-10		AX.LÜFTER 12VDC 15.5L/S 80X80X25.4	PAPST	AXIAL VENTILATING FAN MULTIFAN 80X80X25 12VDC - 8412

ROHDE&SCHWARZ

Stromläufe
Bestückungspläne

Circuit diagrams
Component plans

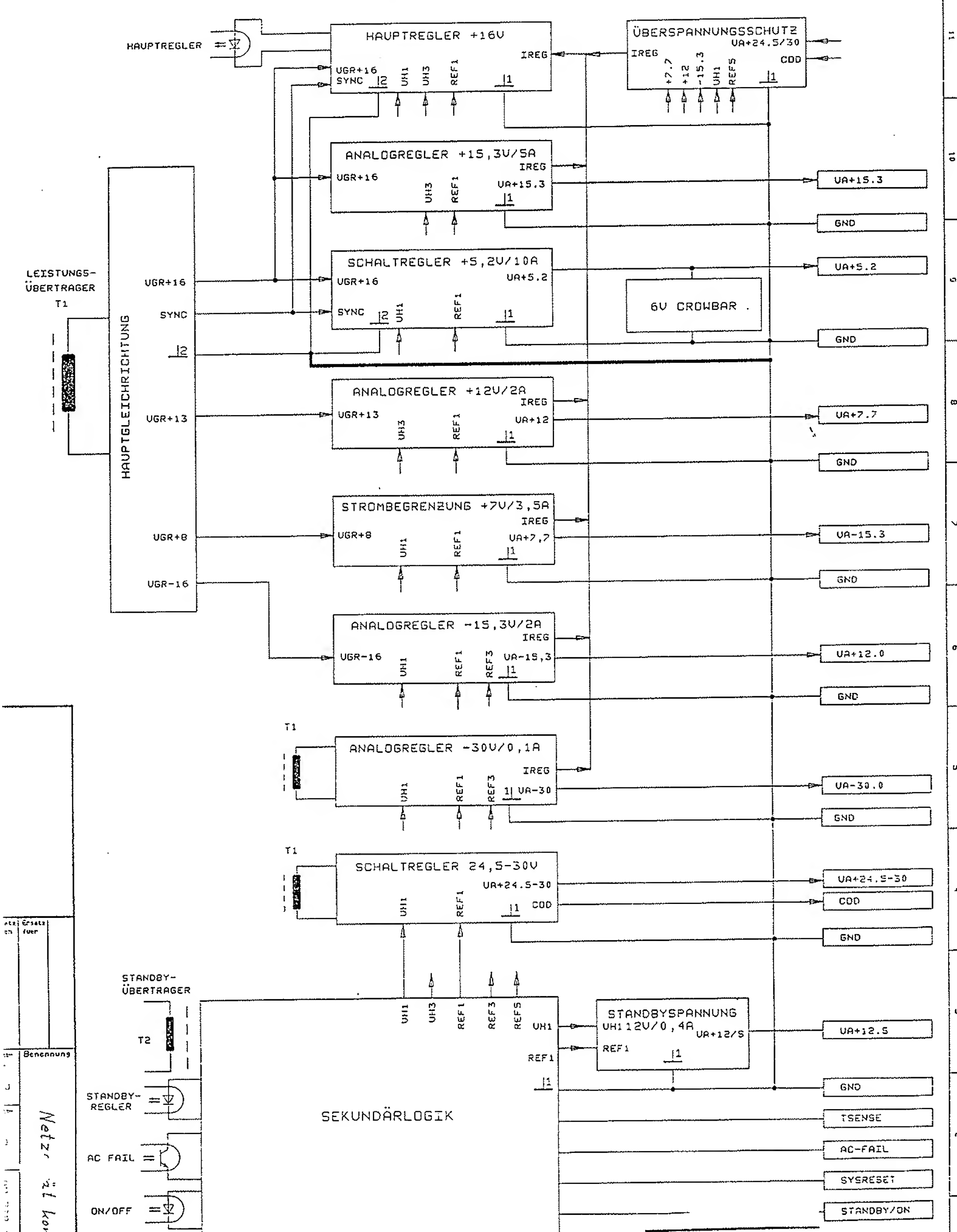
Schémas de circuit
Plans des composants



	Datum	Name
Bearb.	20.2.92	KU2
Gepr.		
Norm	15.4.92	Poyk

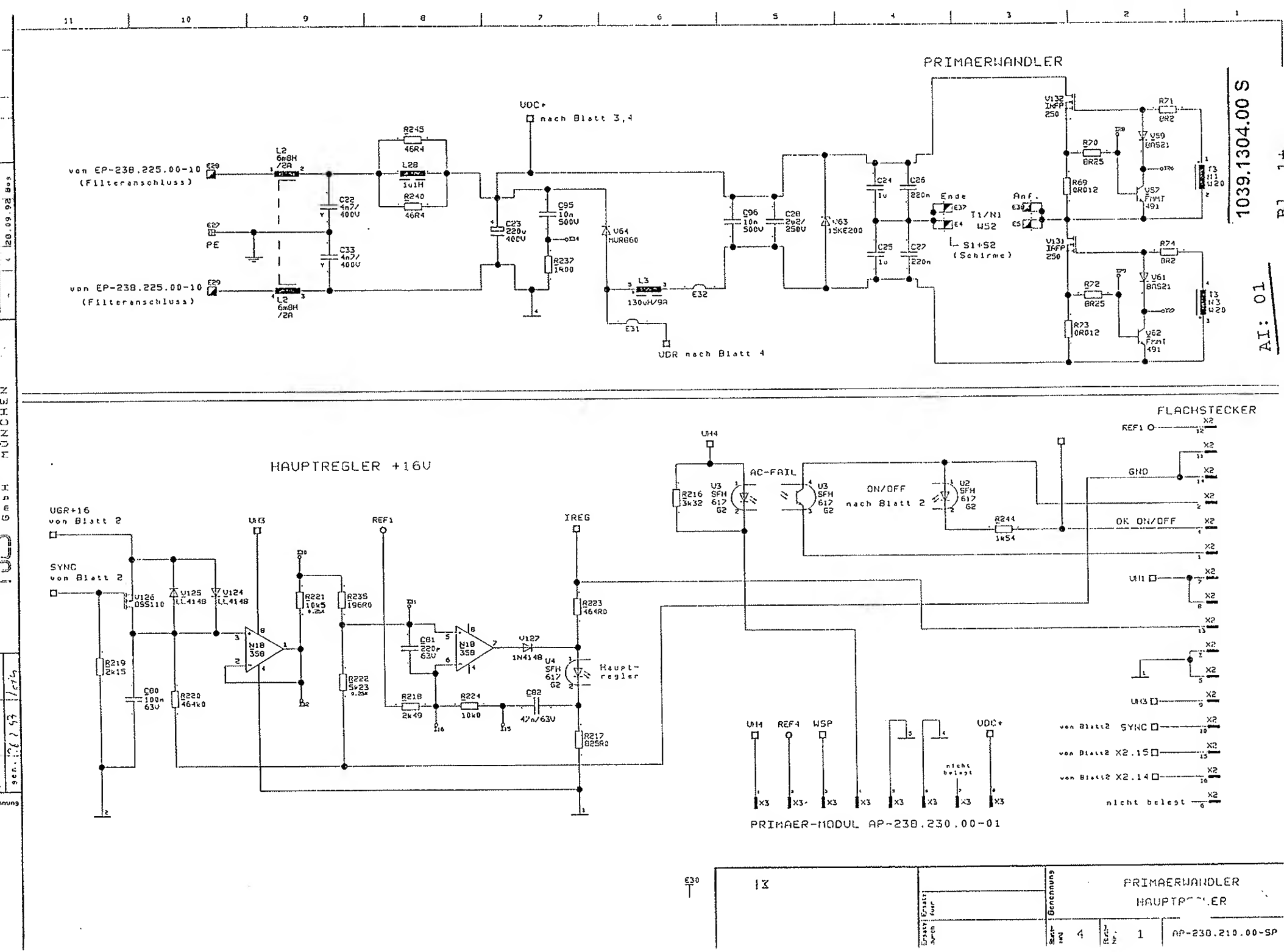
PULS GmbH MÜNCHEN

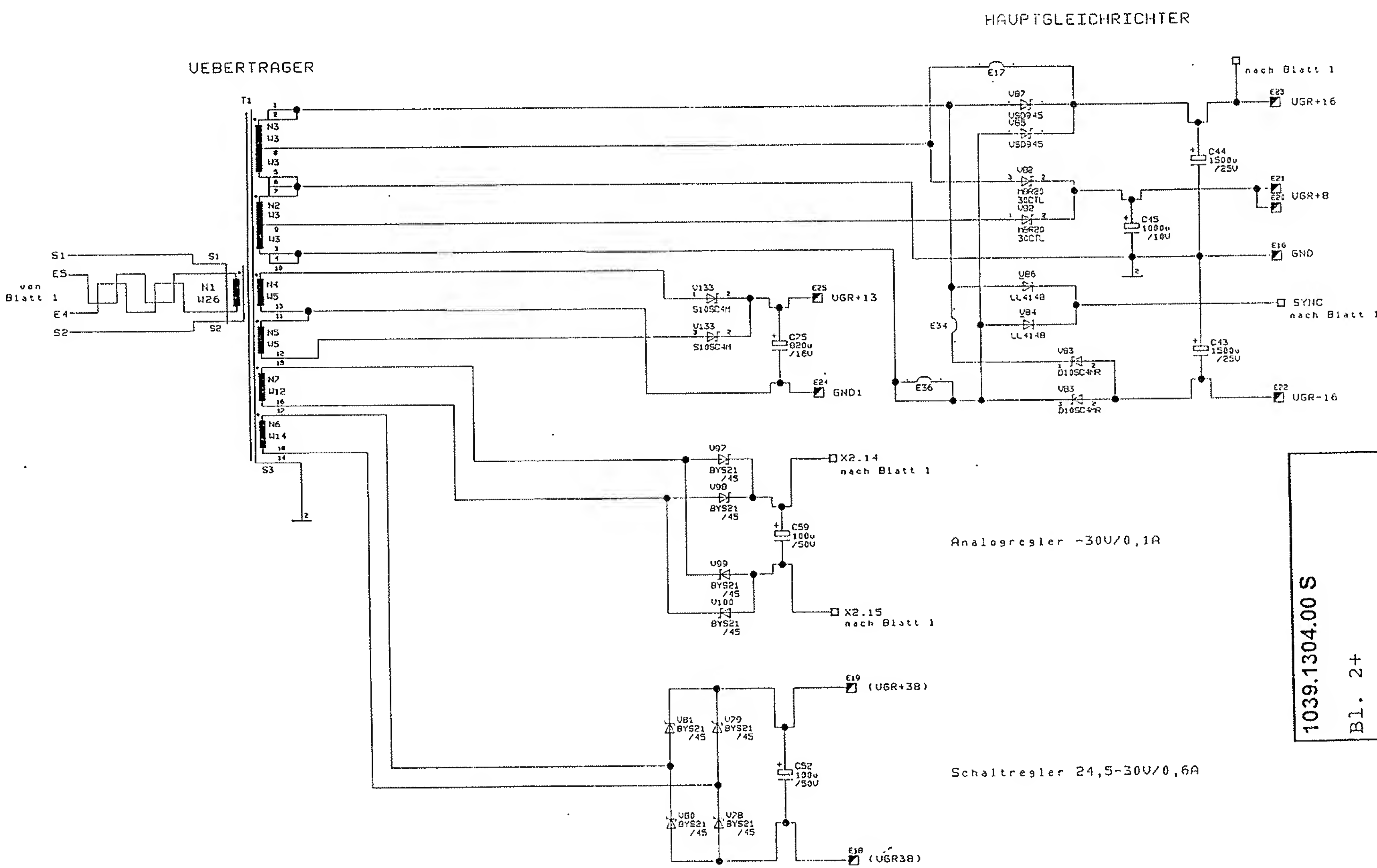
1	20.2.92	KU2
2	16.4.92	Bos



Netzgerät komplett

1039.1304.00 FS


PRIMAERWANDLER
1039.1304.00 S
AI: 01
UDC+
nach Blatt 3,4
von EP-238.225.00-10
(Filteranschluss)
PE
L2 6mBH /2A
L28 1uiH
C22 4n7/ 400V
C33 4n7/ 400V
R245 46R4
R240 46R4
C23 220u 400V
C95 10n 500V
R237 1R00
V64 MUR860
L3 130uH/9A
E31
E32
VDR nach Blatt 4
C96 10n 500V
C28 2u2/ 250V
V63 1SKE200
C24 1u
C25 1u
C26 220n
C27 220n
Ende
Anf.
T1/N1
W52
S1+S2
(Schirme)
V132 IRFP 250
V131 IRFP 250
R71 0R2
R74 0R2
R70 0R25
R72 0R25
R69 0R012
R73 0R012
V59 BAS21
V61 BAS21
V57 FIMT 491
V62 FIMT 491
HAUPTREGLER +16V
UGR+16
von Blatt 2
SYNC
von Blatt 2
UH3
REF1
IREG
V126 DSS110
V125 LL4148
V124 LL4148
R219 2k15
C00 100n 63V
R220 464k0
R221 10k5
R235 196R0
R222 5k23
C81 220n 63V
R218 2k49
R224 10k0
C82 47n/63V
V127 1N4148
U4 SFH 617 G2
Haupt-regler
R223 464R0
R217 825R0
N18 358
UH4
AC-FAIL
R216 3k32
U3 SFH 617 G2
ON/OFF
nach Blatt 2
U2 SFH 617 G2
R244 1k54
FLACHSTECKER
REF1
GND
OK ON/OFF
UH1
UH3
von Blatt2 SYNC
von Blatt2 X2.15
von Blatt2 X2.14
nicht belegt
UH4
REF1
WSP
UDC+
nicht belegt
PRIMAER-MODUL AP-230.230.00-01
E30
13
PRIMAERWANDLER
HAUPTREGLER
AP-230.210.00-SP



1039.1304.00 S

Bl. 2+

AI: 01

GLEICHRICHTER

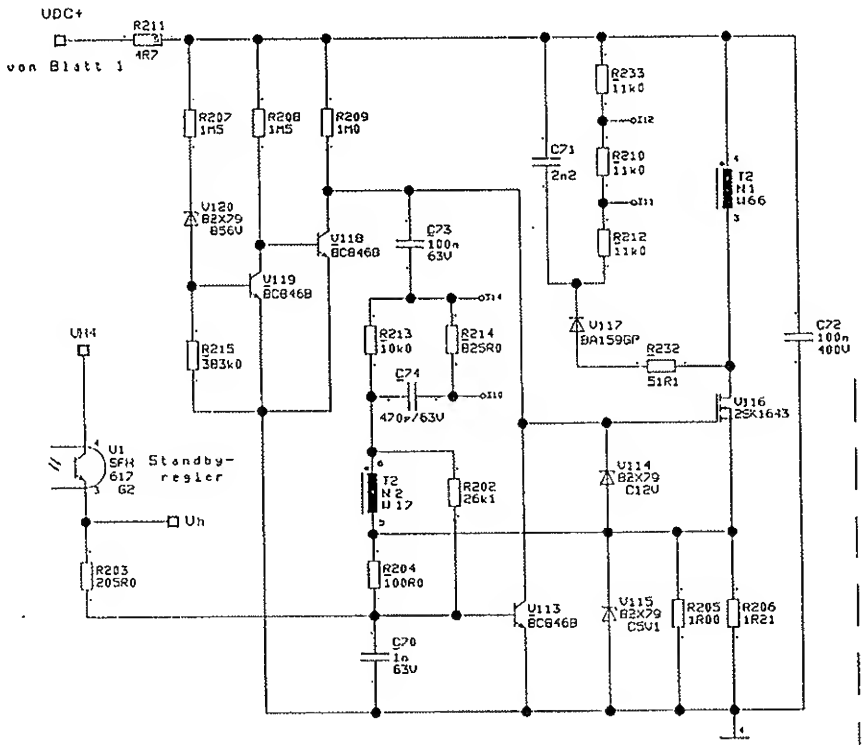
Benennung

Ersatz durch	Ersatz fuer	Blatt Nr.	Blatt Nr.	
		4	2	AP ..38.210.00-SP

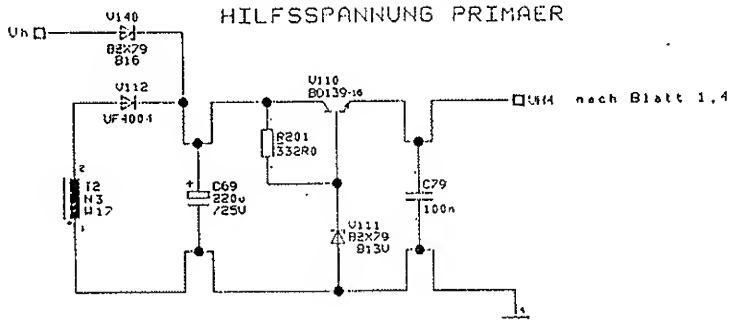
gen. 76 2 97 Röh

4 28.09.92 Bos

STANDBY-WANDLER

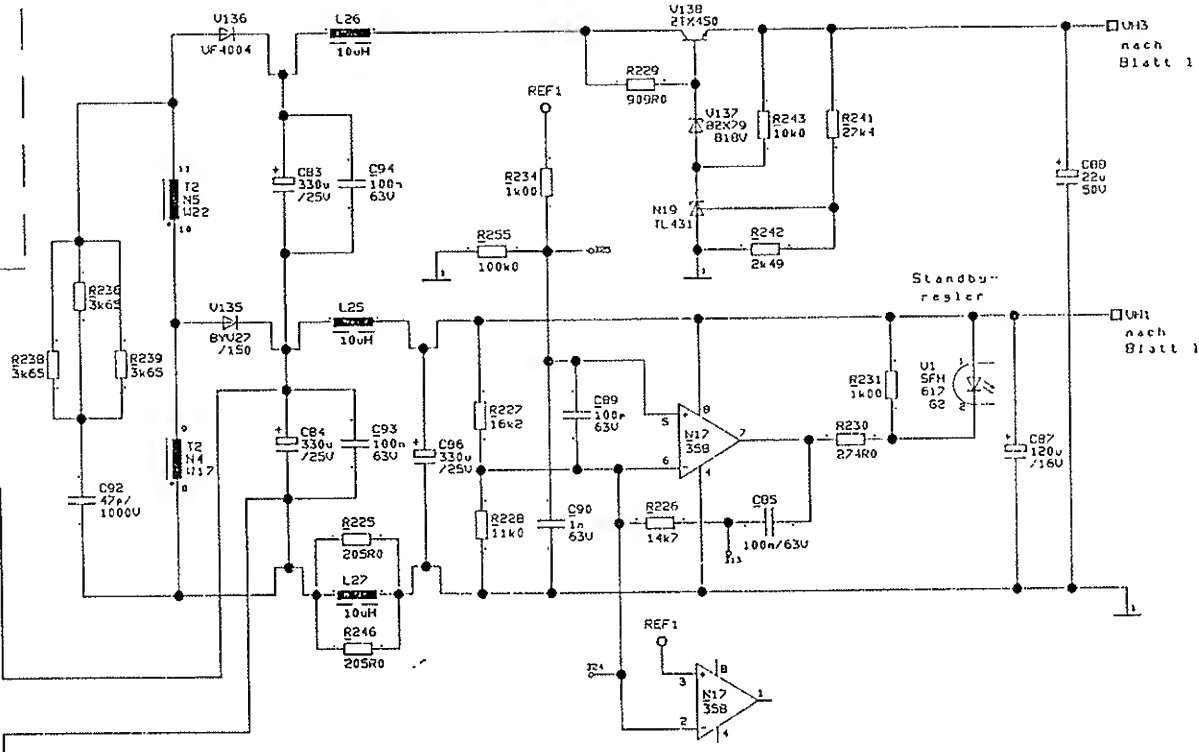


HILFSSPANNUNG PRIMAER

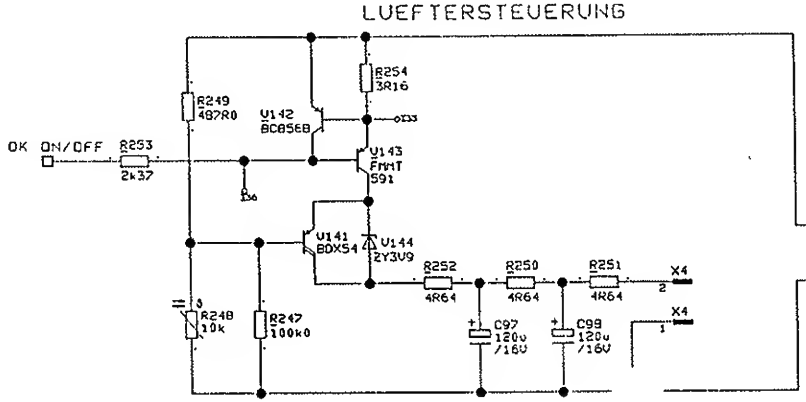


1039.1304.00 S
Bl. 3+
AI: 01

HILFSSPANNUNGEN SEKUNDAER



LUEFTERSTEUERUNG

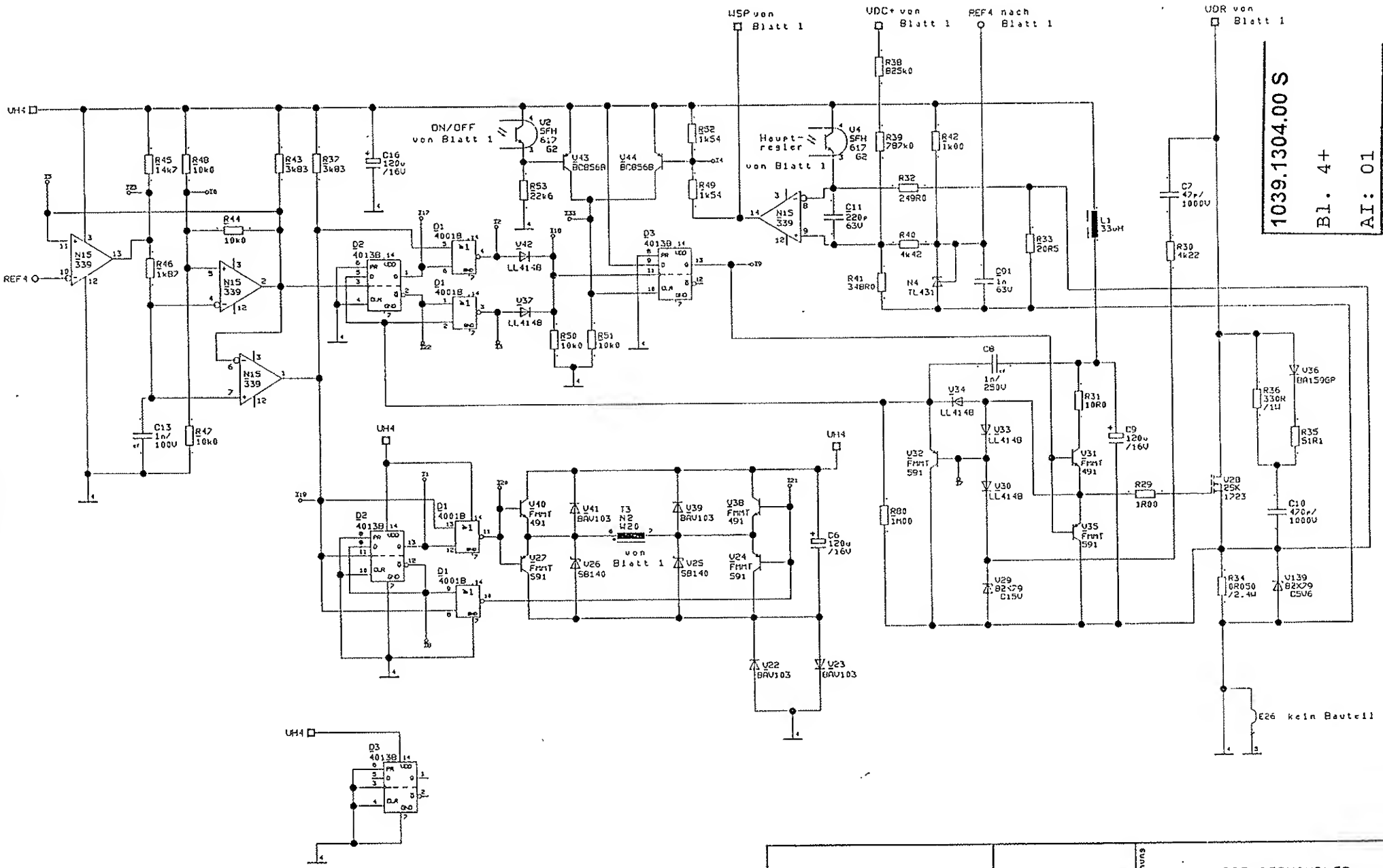


E33

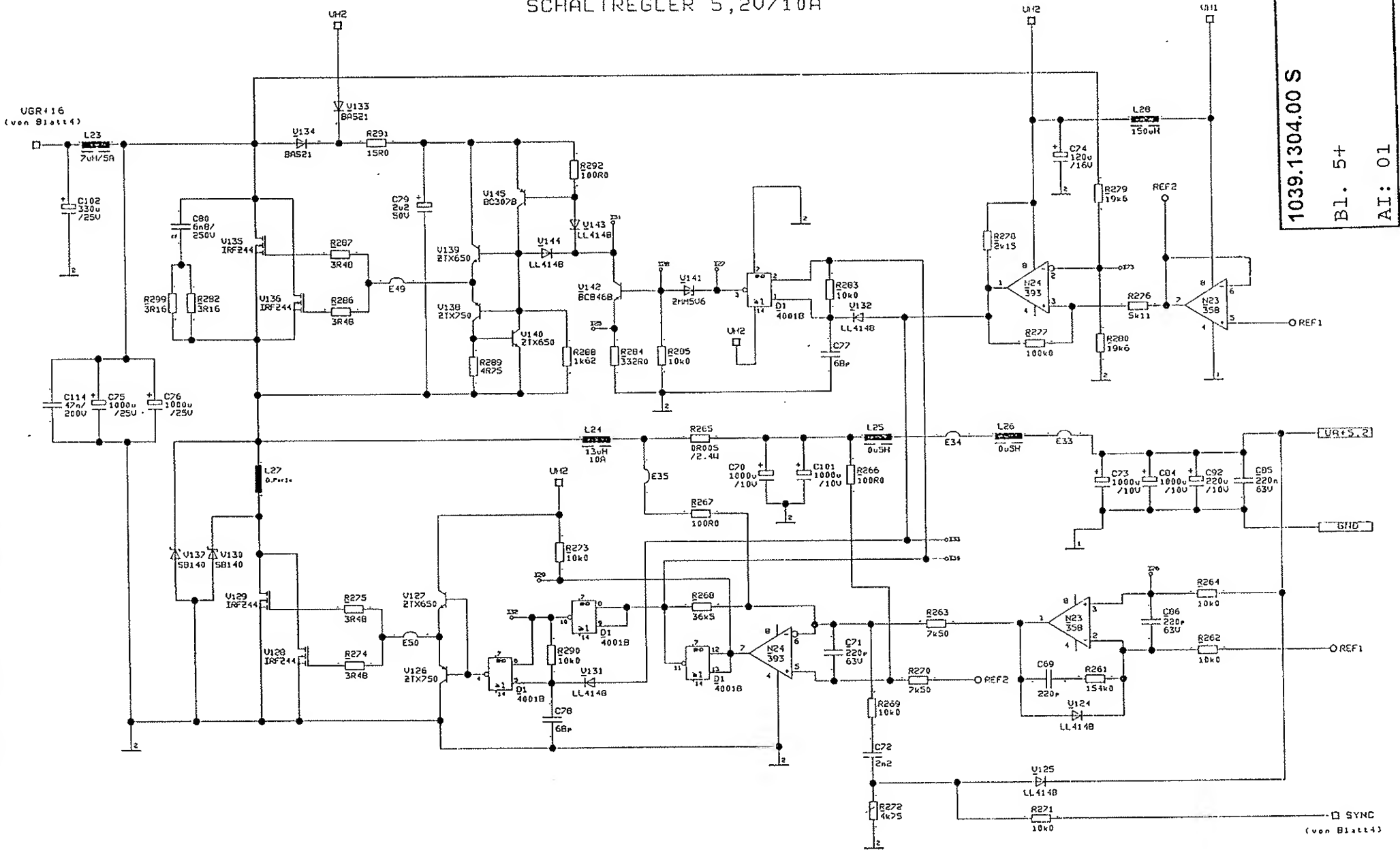
STANDBYSPANNUNG
HILFSSPANNUNG

Bl. 4 Bl. 3 AP-238.210.00-SP

PRIMAERWANDLER UND ANSTEUERUNG

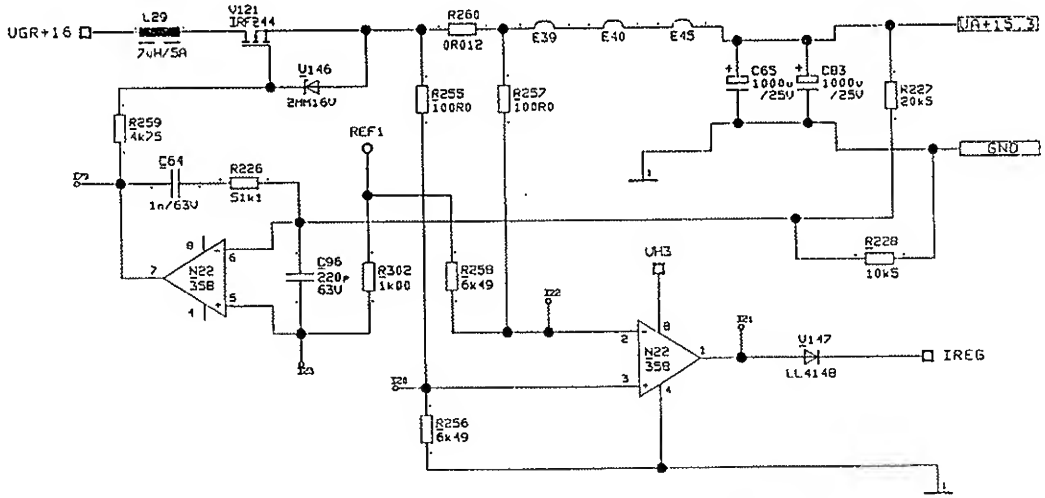


SCHALTREGLER 5,2V/10A

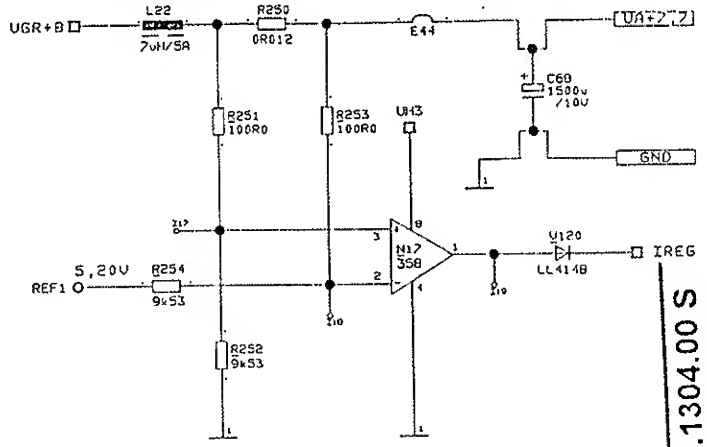


13.....	Ersatz für	Benennung	SCHALTREGLER 5,2V/10A	
	Ersatz durch	Blatt-Nr. 6	Zeichn.-Nr. 1	Nr. 038.220.00-SP

ANALOGREGLER 15,3V/5A



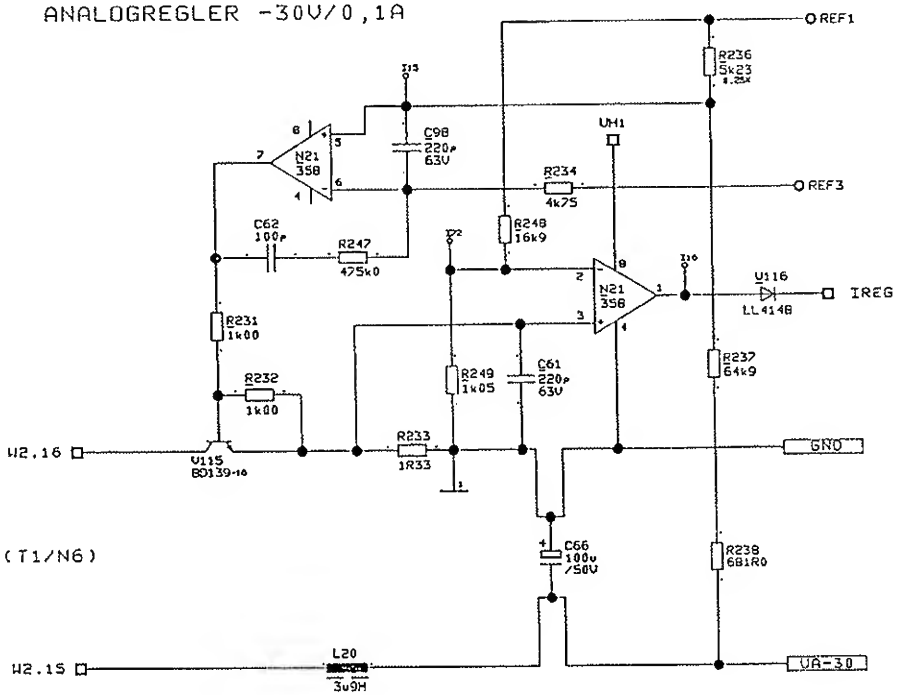
STROMBEGRENZUNG +7V/3,5A



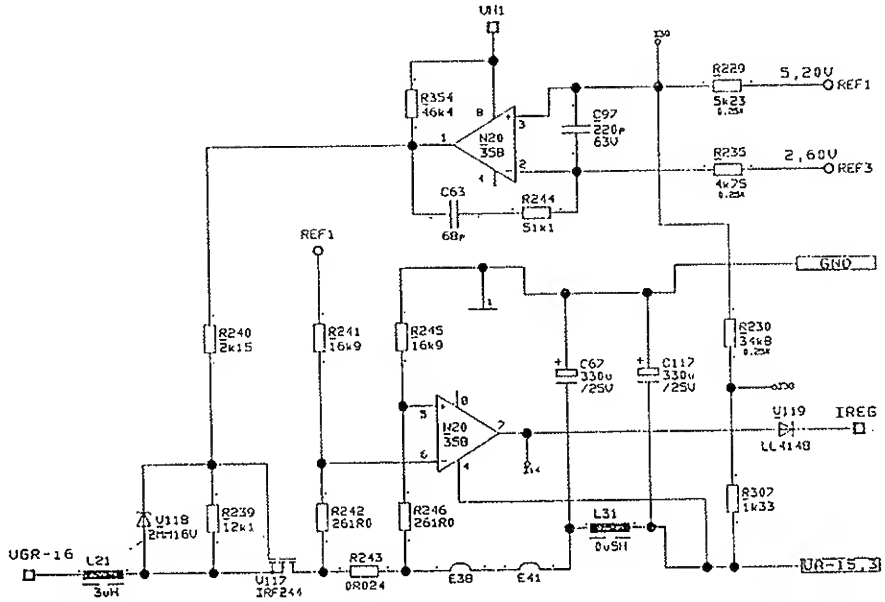
1039.1304.00 S

Bl. 6+

ANALOGREGLER -30V/0,1A

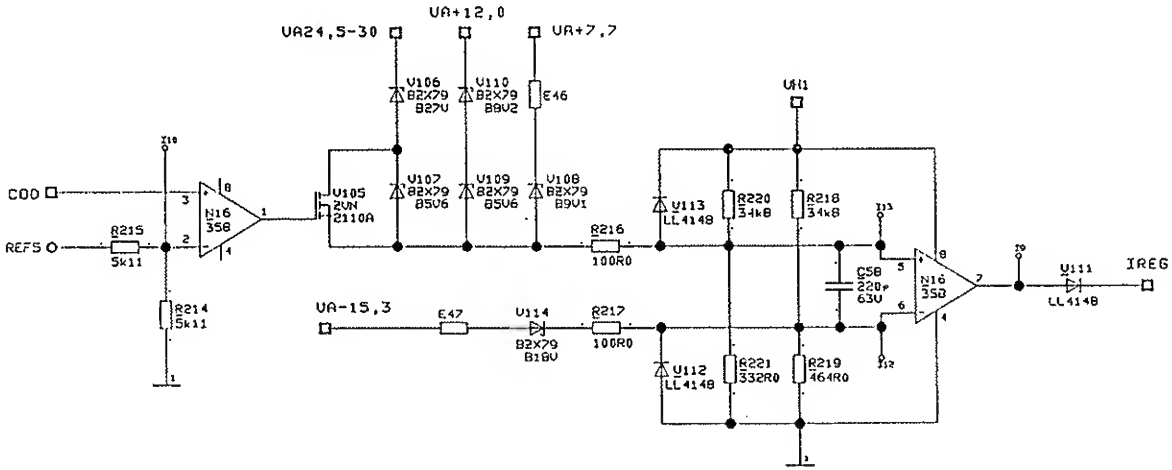


ANALOGREGLER -15V/2A

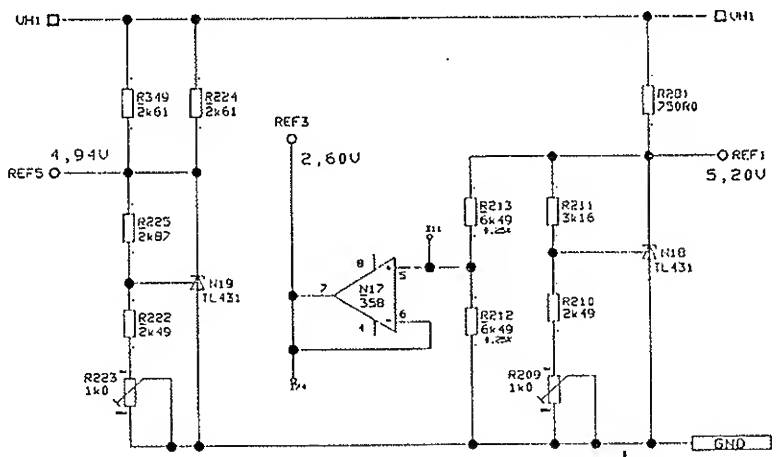


.....	Ersatz für	Benennung	REGLER 15,3V/5A -15V/2A -30V/0,1A I-BEG. 7V/ 5A	
		Blatt 6	Bl.-Nr. 2	Nr. 038.220.00-S

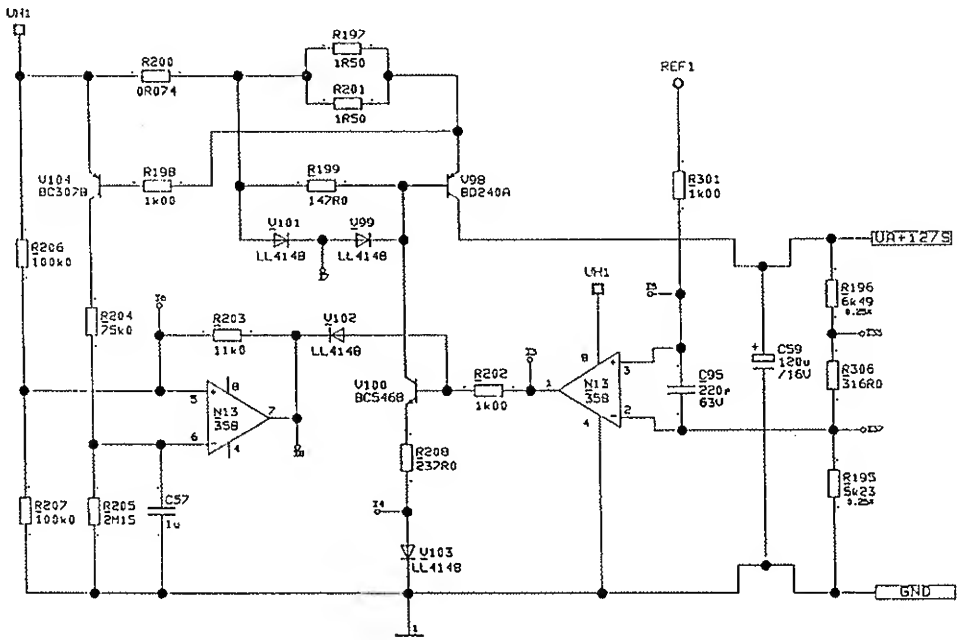
ZUSATZ-UEBERSPANNUNGSSCHUTZ



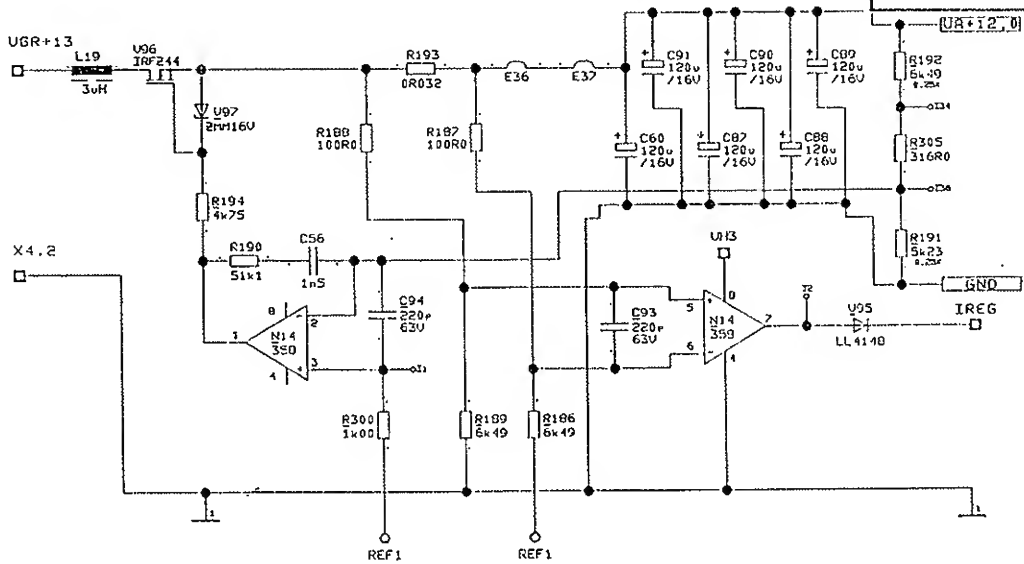
REFERENZERZEUGUNG



STANDBYSPANNUNG 12V

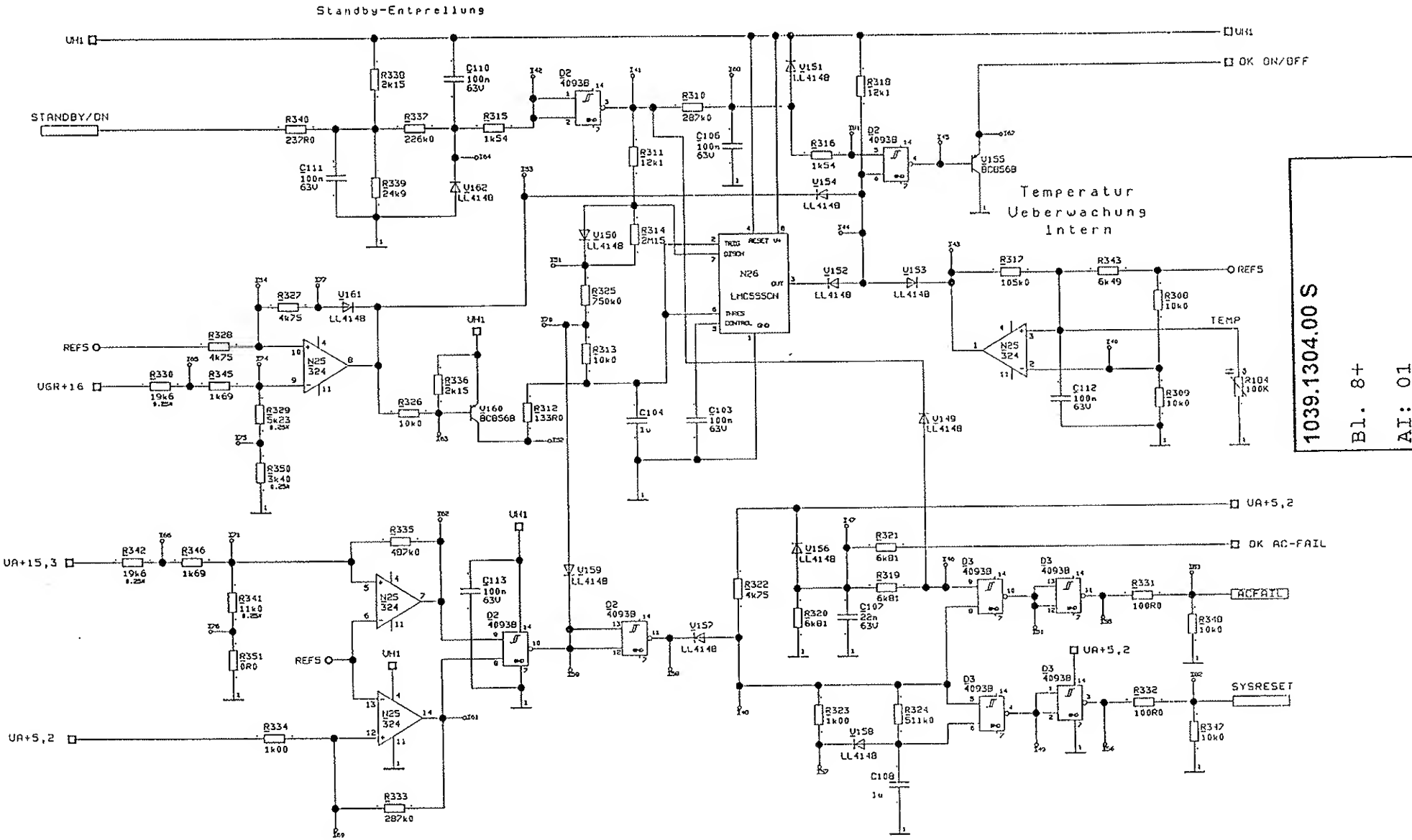


ANALOGREGLER +12V/2A



1039.1304.00 S Bl. 7+ AI: 01

Ersatz für	Benennung	UEBERSPANNUNGSSCHUTZ REFERENZERZEUGUNG REGLER 12V/2A STANDBY 12V	
Ersatz durch	Bauteilnr. 6	Baugr. 3	AP-230.220.00-SP



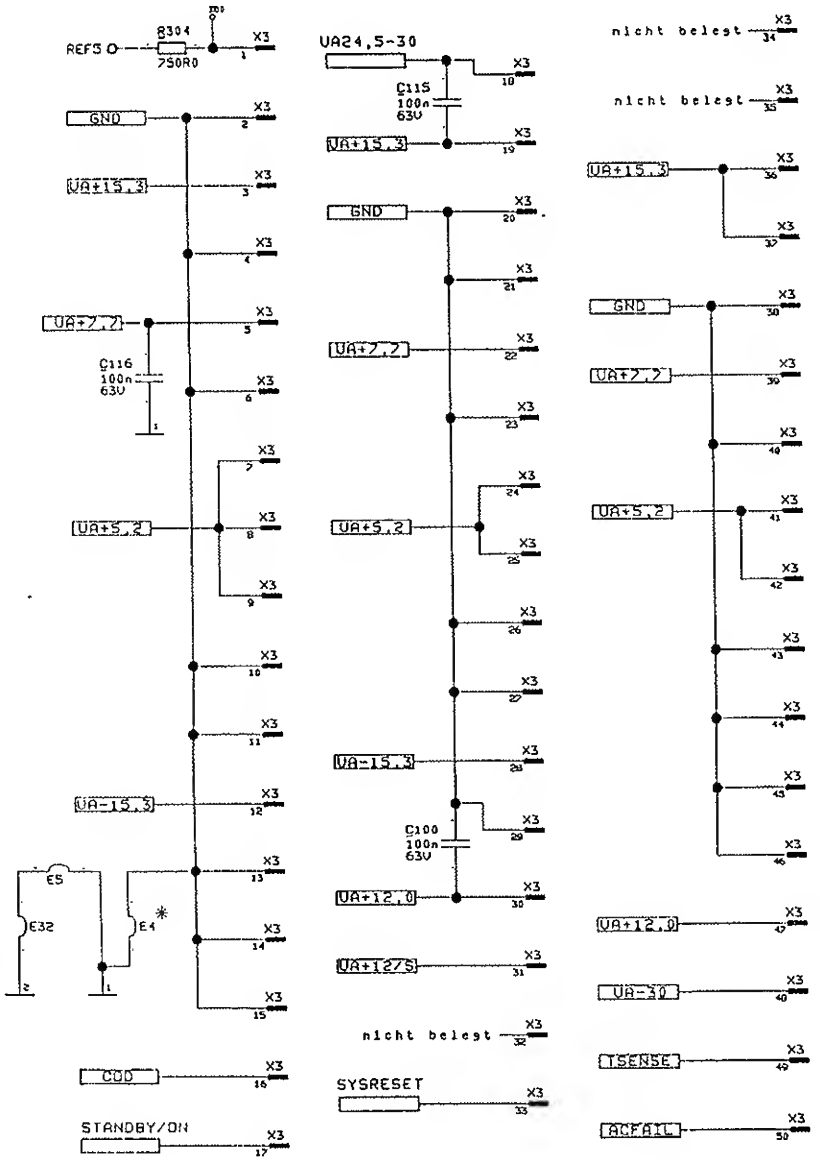
1039.1304.00 S

Bl. 8+

AI: 01

Ersatz für	Ersatz durch	Benennung	TEMPERATURUEBERWACHUNG SYSTEMRESET AC-FA...		
		Blatt 6	Blatt 4	AP-438.220.00-SP	

AUSGANGSSTECKER



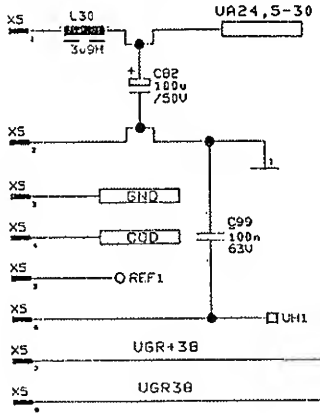
* E4 ist kein Bauteil

Signale sind aus dem Geraet herausgefuehrt

Signale sind im Geraet verwendet

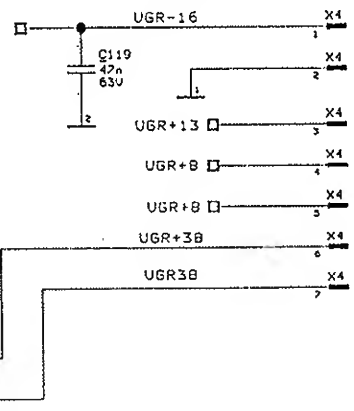
MODUL 1

(AP-238.240.00-01)



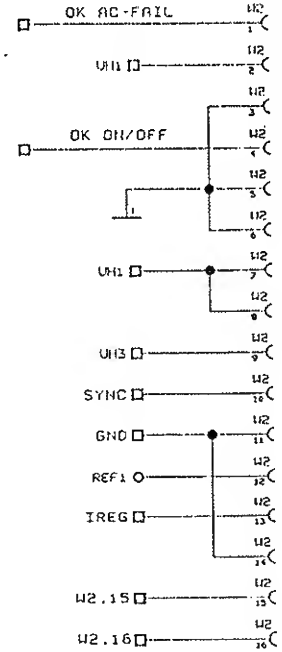
LP-VERBINDER

(AP-238.210.00-01)

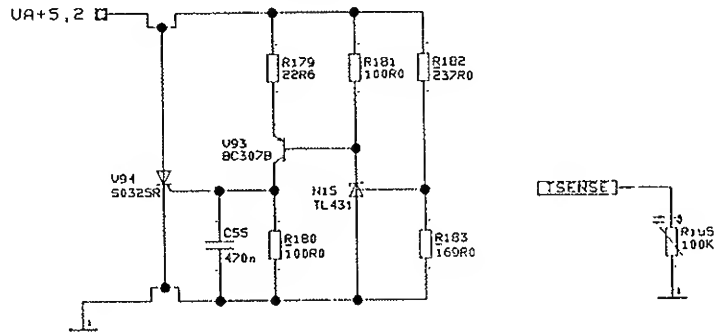


FLACHBANDKABEL

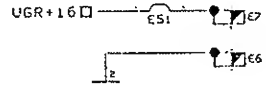
(AP-230.210.00-01)



6V Crowbar



EINZELLEITUNGEN

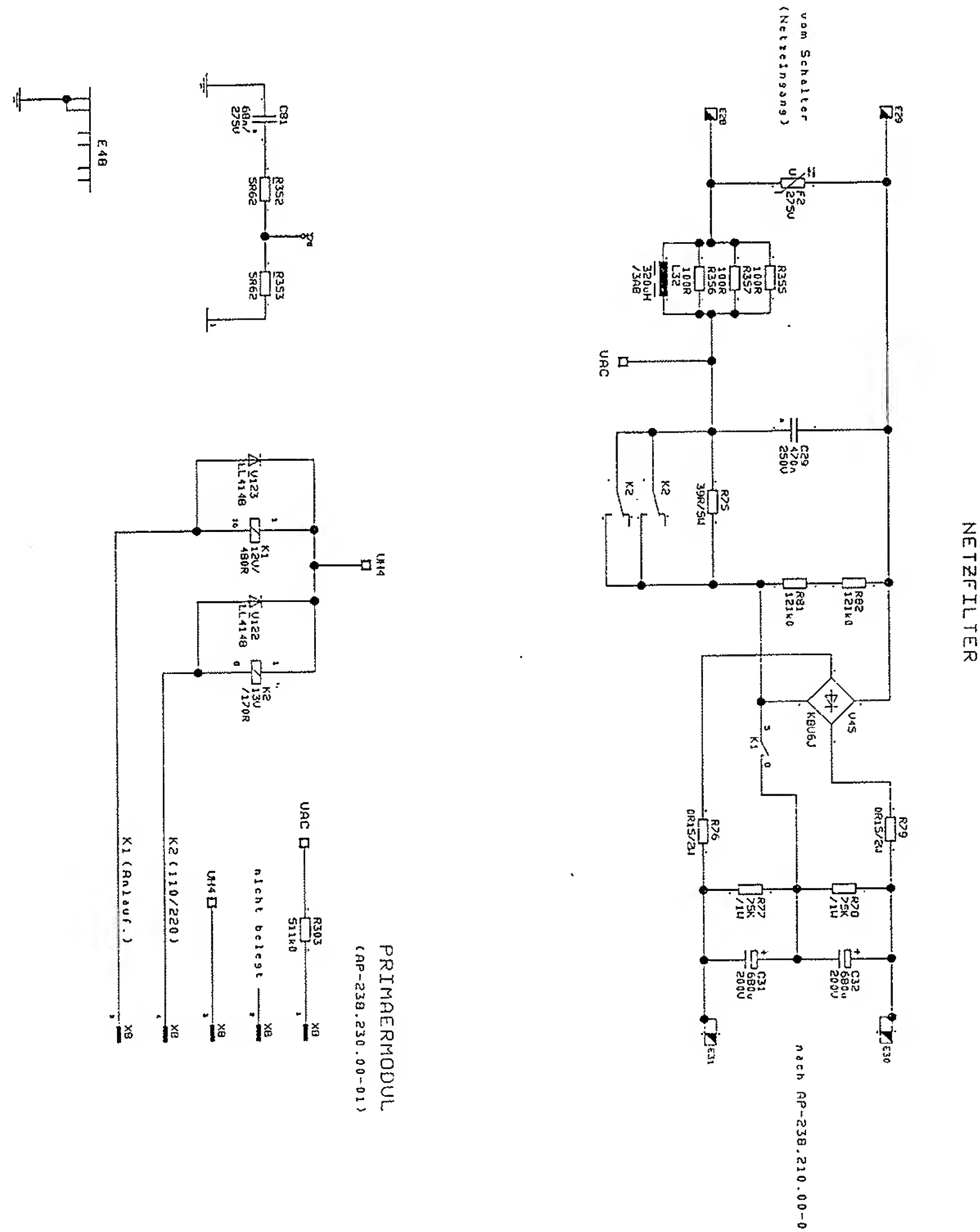


1039.1304.00 S

Ersatz für		Benennung	AUSGANGSSTECKER& LP-VERBINDER		
Ersatz durch		Blatt 6	Blatt-Nr. 5	Nr. 238.220.00-SP	

PULS GmbH MÜNCHEN

3	19.08.92	Bos	6 17.12.92
4	28.09.92	Bos	



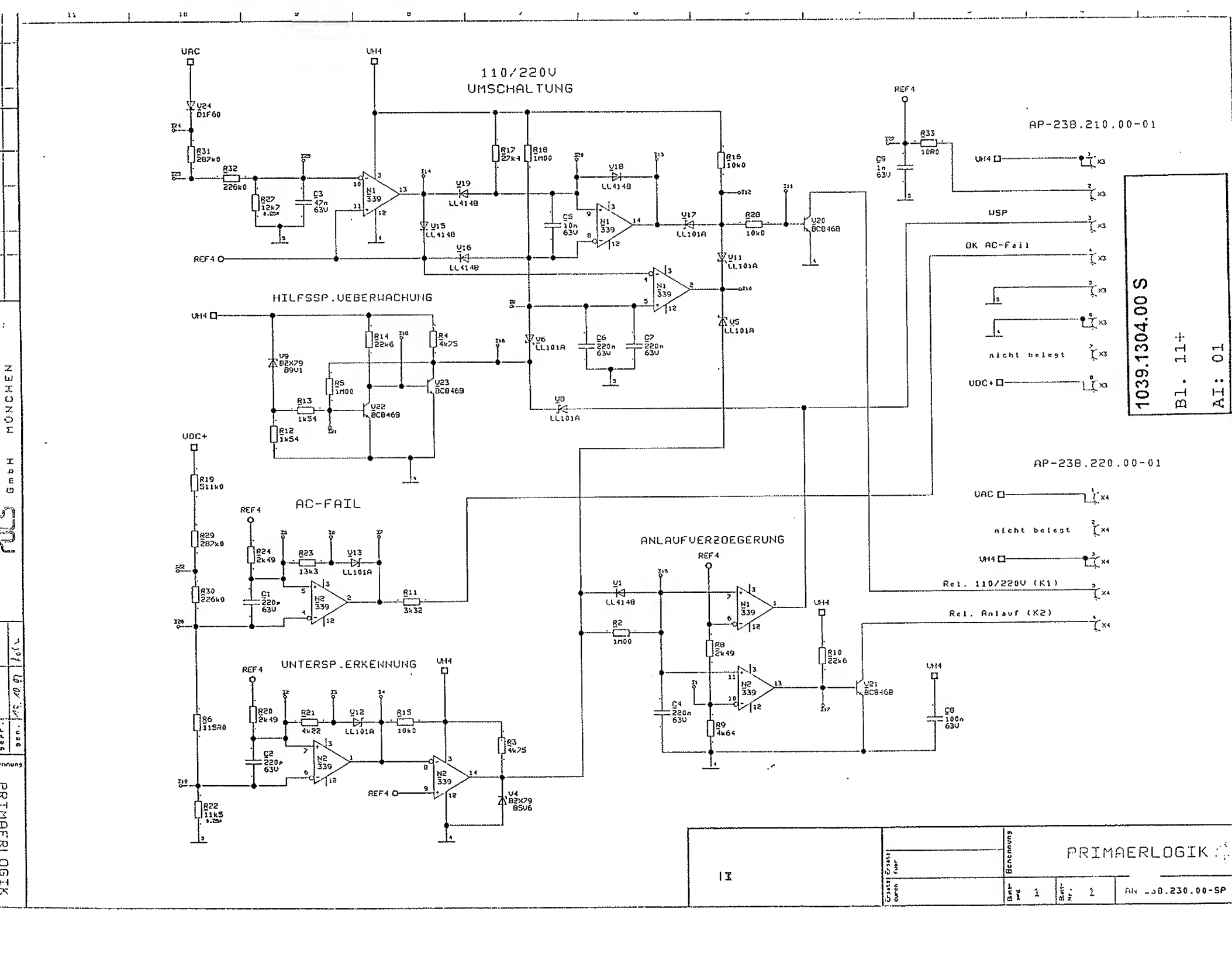
Blatt 6

PRIMAERFILTER GLEICHRICHTER

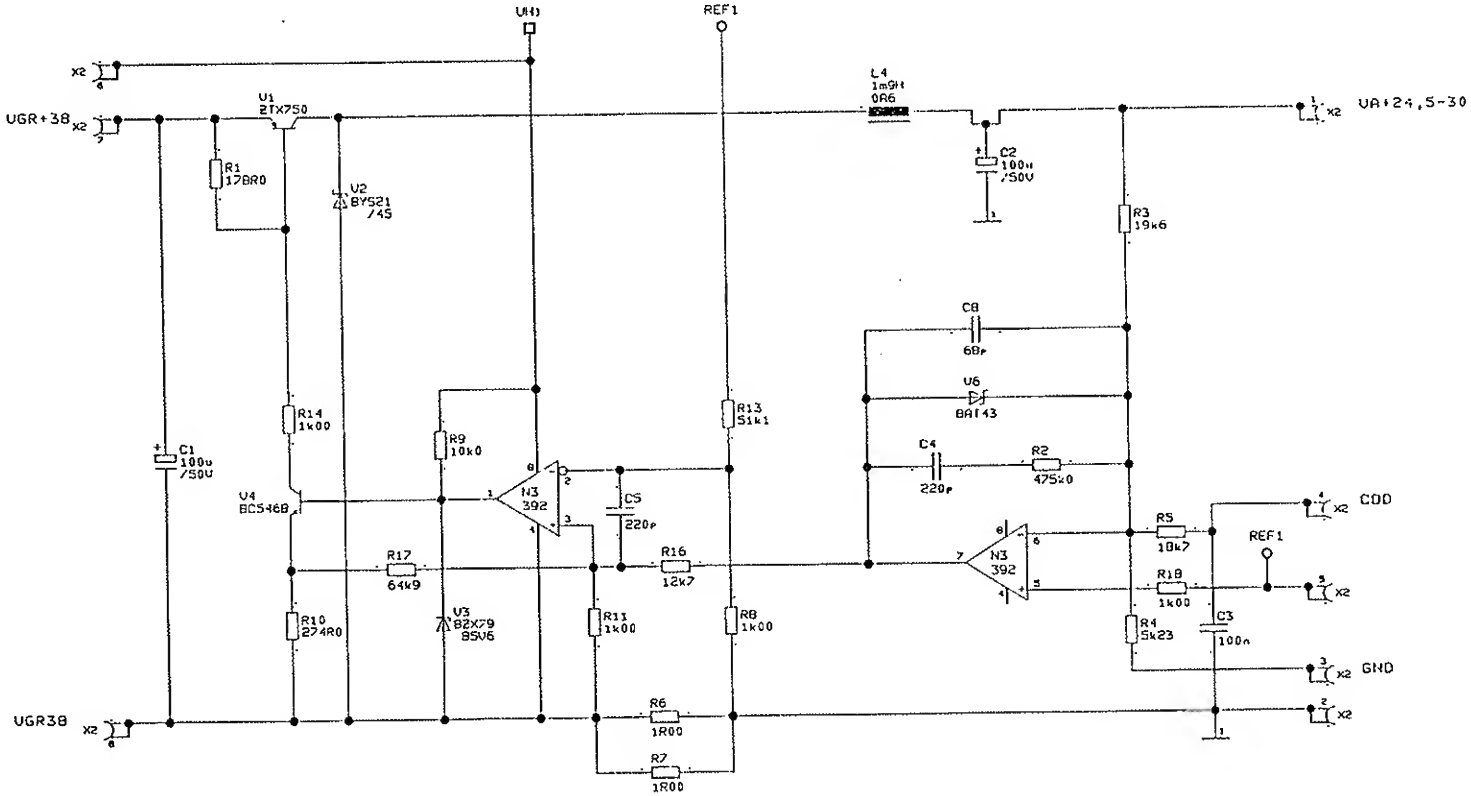
1039.1304.00 S

Bl. 10+

AI: 01


110/220V
UMSCHALTUNG
HILFSSP.UEBERWACHUNG
AC-FAIL
UNTERSP.ERKENNUNG
ANLAUFVERZOEGERUNG
AP-238.210.00-01
AP-238.220.00-01
WSP
OK AC-Fail
nicht belegt
Rel. 110/220V (K1)
Rel. Anlauf (K2)
1039.1304.00 S
Bl. 11+
AI: 01
PRIMAERLOGIK
PRIMÄRLOGIK
FUS GmbH MÜNCHEN

SCHALTREGLER 24,5-30V/0,6A



1039.1304.00 S

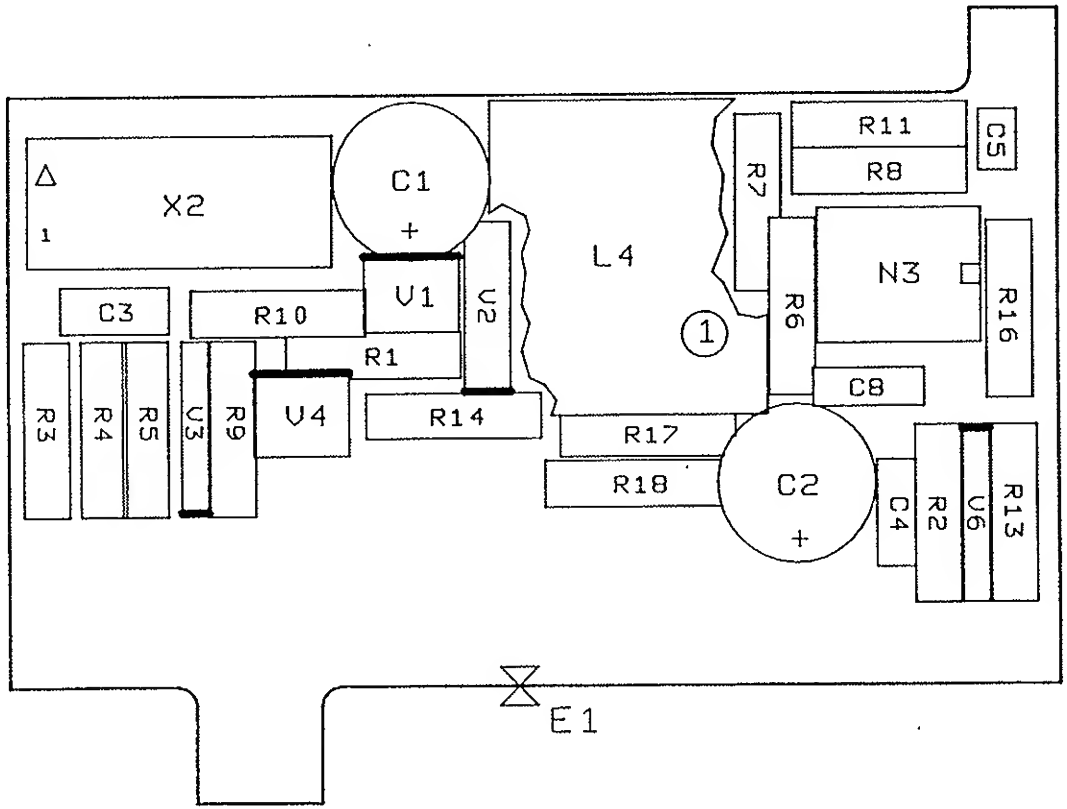
Bl. 12-

AI: 01

IX		Benennung	CLP
Stand: 15. 2			SEKUNDÄRMODUL 1
		Blatt: 1	Bl.: 1

gez.	27.[illegible]92	KU2	1			27.03.92	KU2
gepr.			2			15.06.92	Neu.
gen.	15.10.92	Rey4	3	-	-	31.08.92	Bog

PULS GmbH MÜNCHEN



1039.1304.00
Bl. 1+
AI: 01

BLP

AP-239.243.00-2G

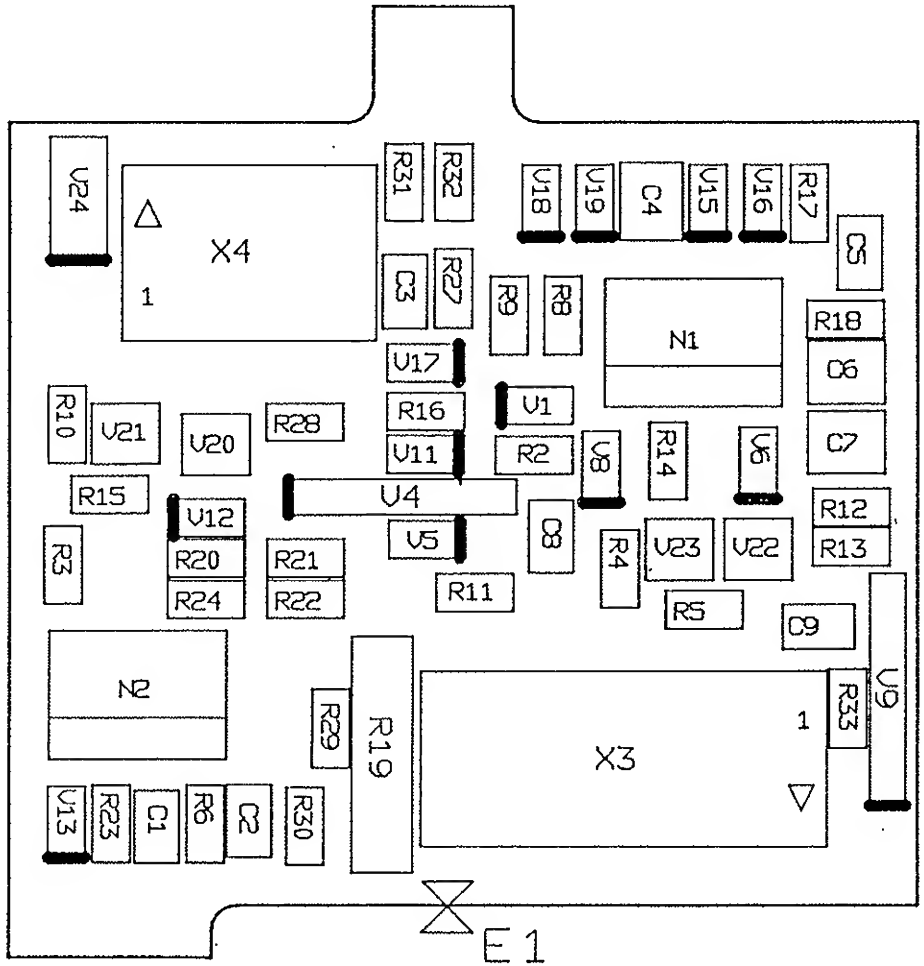
B C D E F G H

1 2 3 4 5

	Datum	Name	ÄM Nr	Datum	VI	Name
gez.	17 .92	JONAS	-	31.08.92	3	Bog
gepr.			-	02.10.92	4	Bog
gen.	5.10.92	Dels				

PULS GmbH MÜNCHEN

ÄM Nr.	Datum	VI	Name	ÄM Nr.	Datum	VI	Name



1039.1304.00
Bl. 2+
AI: 01

SMDM-BLP

AP-238.230.00-26

BENENNUNG

Ersatz fuer

Ersatz durch

Blatt-zahl

Blatt-Nr.

VI

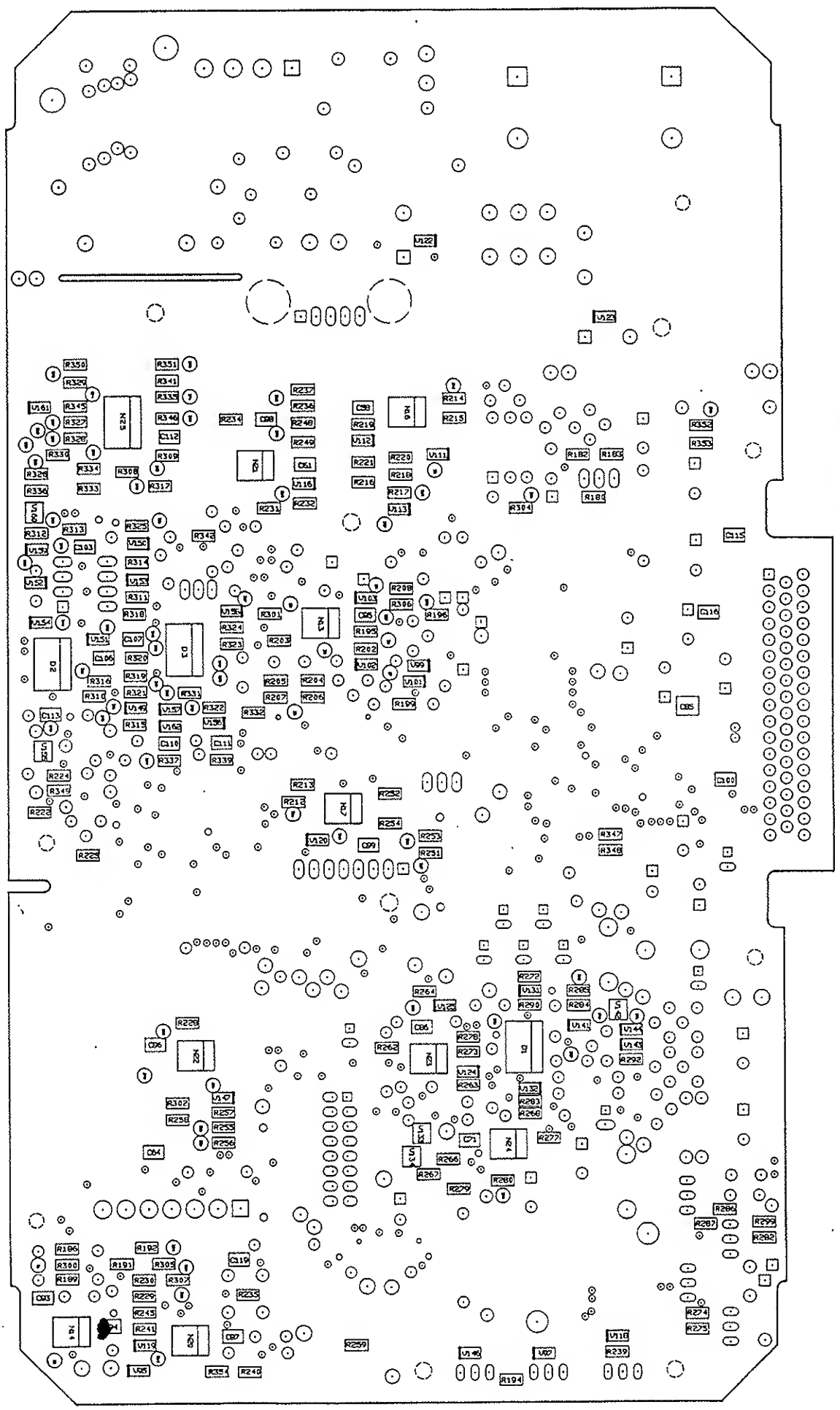
B C D E F G H

5 4 3 2 1

gepr.			
gen.			

PULS GmbH MÜNCHEN

4	01.10.92	Bay	



Ersatz durch	Ersatz fuer

Blatt-Nr.	Benennung
	SMDM-WLP
AP-Nr. 224.00-2G	

1039.1304.00

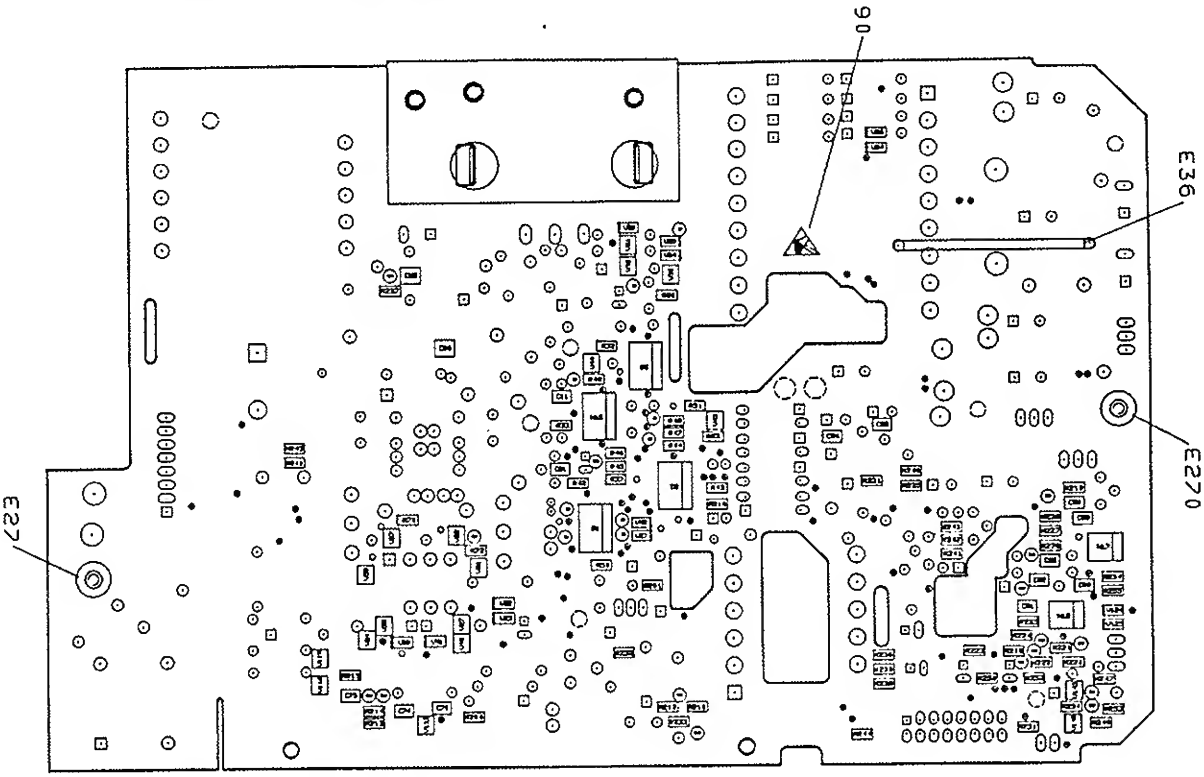
SMDM-CLP

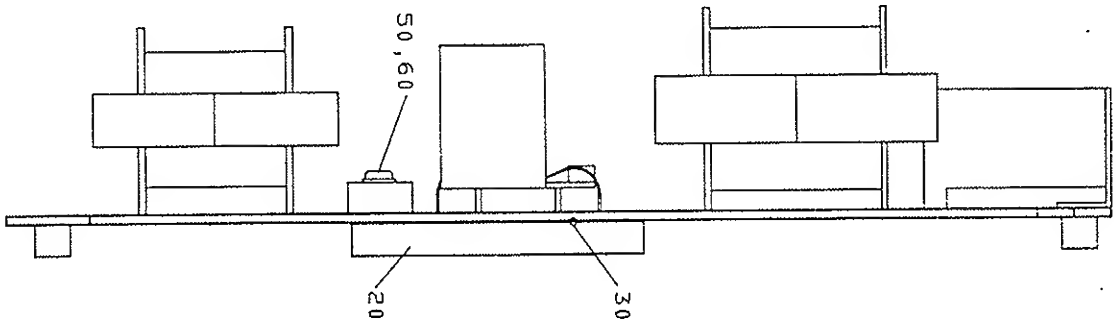
gepr.			
gen.	26.2.97	Lutz	

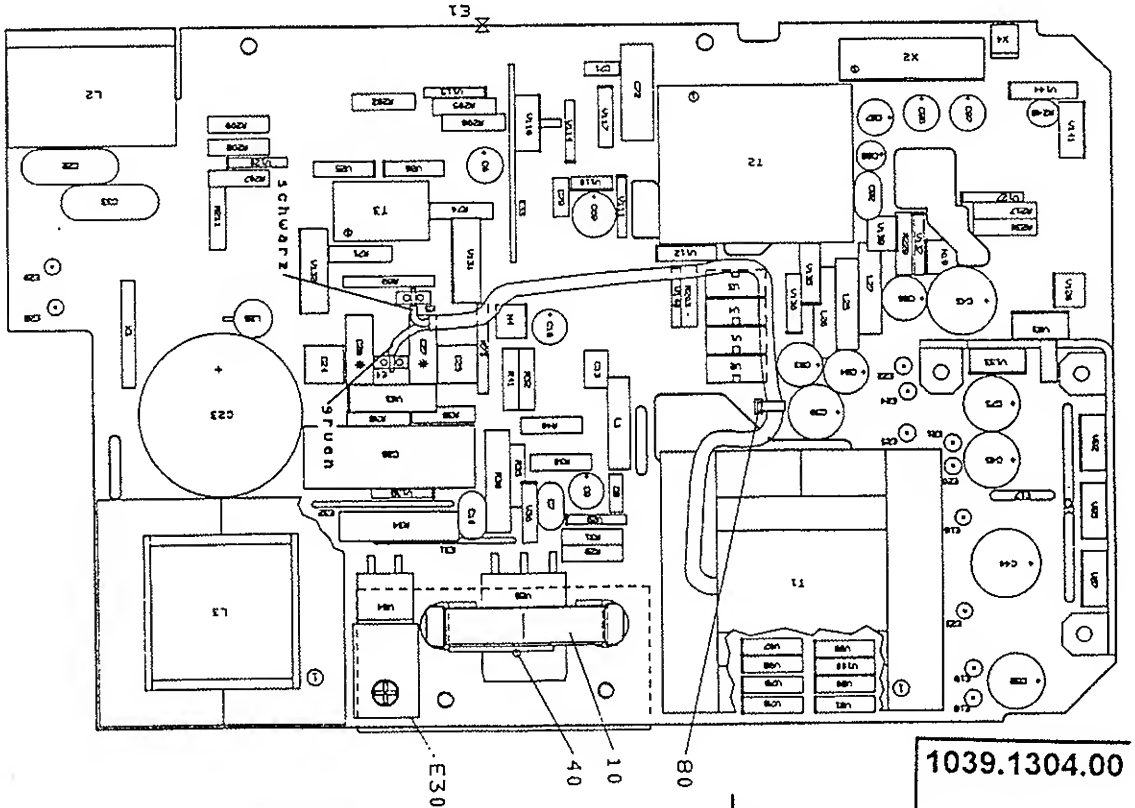
PULS GmbH MÜNCHEN

3	02.09.92	Boy	
4	09.11.92	Boy	

- E27 und E270 in LP eingepresst
- Pos.20 mit Pos.30 montiert
- Auf Lage der Trafoleitung achten
- Anschlussdraethe von Trafo durch Loecher von Steuu gesteckt, umgebogen und verloetet
- Pos.90 unterhalb der LP-Nummer aufgeklebt
- Loetueberstand max. 3mm, LP gewaschen







Ersatz durch	Ersatz fuer

Blatt-Nr.	Benennung

Blatt-Nr.

AP .210.00-25

SMDM-CLP

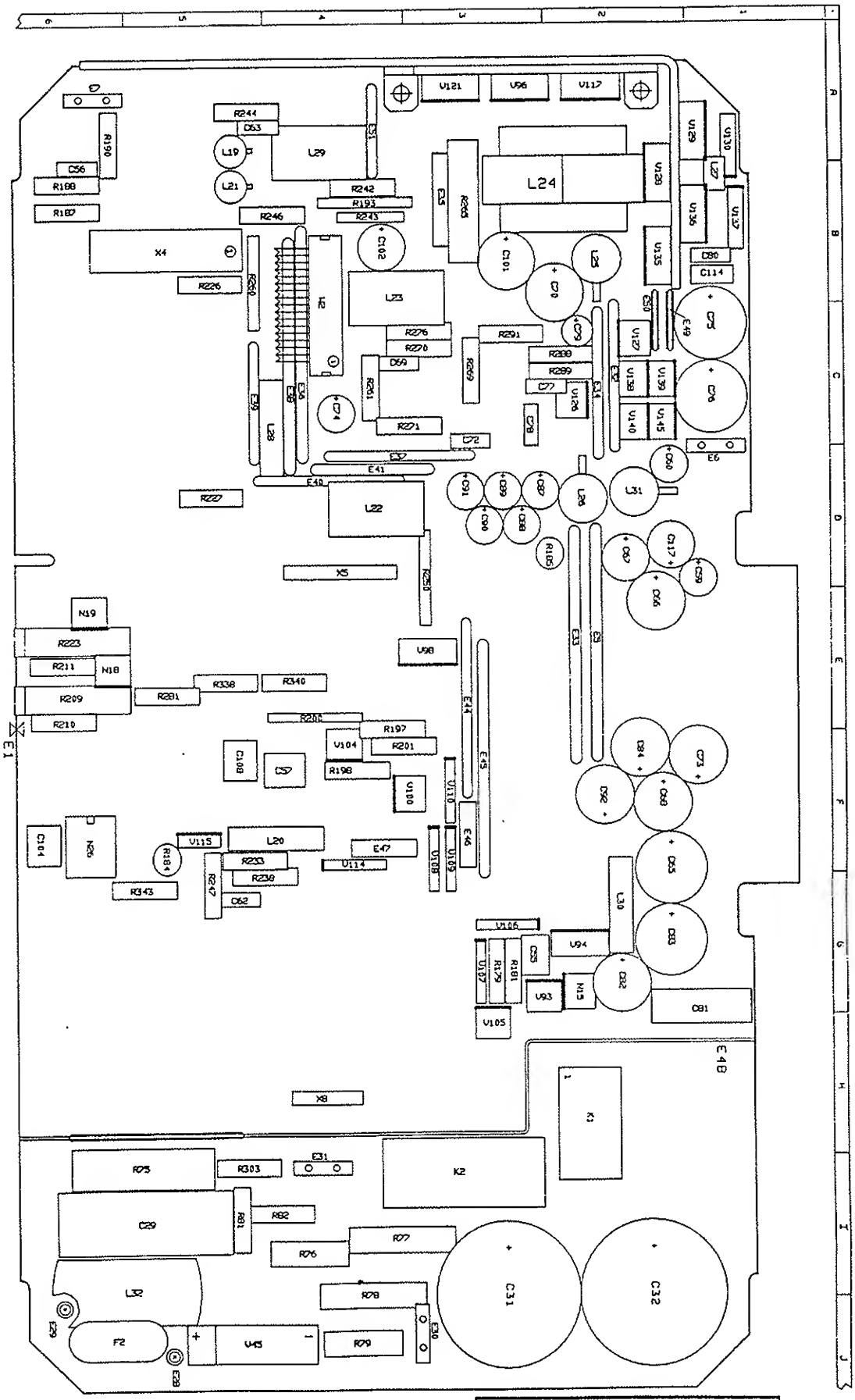
1039.1304.00

AT: 01 Bl. 4+

gepr.			
gen.	16.7.93	Pölz	

PLS GmbH MÜNCHEN

3	02.10.92	Bey
4	09.11.92	Bey



LOETRICHTUNG

Erstellt durch	Ersatz für
Zeichnung	Benennung
Blatt Nr.	SMDM-BLP
	AP-Nr. 8.222.00-20

1039.1304.00

Bl. 5-

ROHDE&SCHWARZ

SERVICE INSTRUCTIONS

Fan Unit

1084.8904.02

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet

Part lists
in numerical order

Listes des pièces détachées
par numéros de référence

Comp. No.	Designation	Stock No.	Manufacturer	Designation	Contained in
.	XX VARIANTENERKLAERUNG IDENTIFICATION OF MODELS				
C1	CE 4,7UF+-20%50V RUND SMD SMD ELECTROLYTIC CAPACIT.	CE 0009.6530.00	SANYO	50CV4.7FS	
C2	CK 4,7UF 20% 40VDC SMD SMD-FILM-CAPACITOR	1090.4294.00	WESTERMANN	SMD 5045 4,7UF	
C4	CC 470NF+-10%50V X7R 1812 CERAMIC CHIP CAPACITOR	CC 0007.7498.00	AVX	1812 5C 474KA TOOF	
C5	CE 100UF+-20%16V RUND SMD SMD-ELECTOLYTIC CAPACIT.	CE 0009.6553.00	SANYO	16CV100F(G)S	
C6	CC 2,2UF+-15% 16VX7R 1206 CERAMIC CAPACITOR	1090.4188.00	TAIYO_JUDE	EMK316BJ225KL	
C7	CE 100UF+-20%16V RUND SMD SMD-ELECTOLYTIC CAPACIT.	CE 0009.6553.00	SANYO	16CV100F(G)S	
C8	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
D1	BL HEF4093BT 4X2IN.SCHTR SCHMITT TRIGGER	BL 0350.4090.00	VALVO	HEF4093BT	
D2	BL HEF4528BT 2XMONOFLOP DUAL MONOSTABLE MULTIVIB.	BL 0007.5089.00	PHILIPS	HEF4528BT	
P2	VL EINPRESSSTIFT 5,6 PIN	VL 0010.7250.00	AMP	1-928776-5	
P6	VL EINPRESSSTIFT 5,6 PIN	VL 0010.7250.00	AMP	1-928776-5	
R1	RG 100K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5363.00	DRALORIC	CR 0603	
R2	RG 200K +-1% TK100 0603 SMD RESISTOR EIA0603	1093.6200.00	PHILIPS_CO	RC 22 H	
R3	RG 200K +-1% TK100 0603 SMD RESISTOR EIA0603	1093.6200.00	PHILIPS_CO	RC 22 H	
R4	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R5	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R6	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R7	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R8	RG 301 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6027.00	PHILIPS_CO	RC02	
R9	RG 47K +-1% TK100 0603 SMD RESISTOR EIA0603	0009.7072.00	PHILIPS_CO	RC 22 H	
R10	RG 1KO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5340.00	PHILIPS_CO	RC 22 H	
R11	RG 5K11 +-1% TK100 0603 SMD RESISTOR EIA0603	1097.6334.00	PHILIPS_CO	RC 22 H	
R12	RG 12R1 1% 1W 1218 SMD RESISTOR	0048.6338.00	PHILIPS_CO	PRC201-12R1 1% TK100	
R13	RG 12R1 1% 1W 1218 SMD RESISTOR	0048.6338.00	PHILIPS_CO	PRC201-12R1 1% TK100	
R14	RG 12R1 1% 1W 1218 SMD RESISTOR	0048.6338.00	PHILIPS_CO	PRC201-12R1 1% TK100	
R15	RG 12R1 1% 1W 1218 SMD RESISTOR	0048.6338.00	PHILIPS_CO	PRC201-12R1 1% TK100	
R16	RG 12R1 1% 1W 1218 SMD RESISTOR	0048.6338.00	PHILIPS_CO	PRC201-12R1 1% TK100	
R17 ..21	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R22	RG 1MO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5370.00	DRALORIC	CR 0603	
R23	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R24	RG 10K +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5357.00	PHILIPS_CO	RC 22 H	
R25	RG 1MO +-1% TK100 0603 SMD RESISTOR EIA0603	RG 0009.5370.00	DRALORIC	CR 0603	
S1	ST TEMP.SCHALT.35GRD SCHL TEMPERATURE SWITCH	1085.1455.00	MIDWEST_CO	MTS 35A	
V1	AK BC860B P 45V 200MA TRANSISTOR	AK 0007.7975.00	MOTOROLA	BC860B	
V2	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	Contained in
V3	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V4	AD BAS216 75V UDI HIGHSPEED SWITCHING DIODE	0010.9346.00	PHILIPS_SE	BAS216	
V5	AD BAS216 75V UDI HIGHSPEED SWITCHING DIODE	0010.9346.00	PHILIPS_SE	BAS216	
V8	AM BSS138 N-E 50V MOSF MOSFET	0520.7740.00	SIEMENS	BSS138 (-S566)	
X250	FP STIFTLEISTE 8P. M.VER. CONNECTOR	FP 1100.4461.00	BERG_ELEKT	95000-508	
X251	FP E-PRESS STIFTLEISTE 4P CONNECTOR	0048.5248.00			
X255	FP E-PRESS STIFTLEISTE 2P CONNECTOR	0048.4706.00			

ROHDE&SCHWARZ

SERVICE INSTRUCTIONS

Option Reference Oscillator OCXO SM-B1

1036.7599

Contents

7. Testing and Repair of the Module

7.1 Functional Description

The Reference Oscillator Option OCXO replaces the internal 10-MHz time base by an oven-controlled high-quality crystal oscillator, which considerably improves the instrument data with respect to accuracy of reference frequency and aging.

In addition to the oscillator proper, the module includes components for internal data transmission (D1), data storage (D30) and diagnosis (D40) as well as a switchable output amplifier (V70 and V71). Version 06 also includes a circuitry for generation of the interrupt for the "OVEN COLD" indication (N50,N60).

The oscillator remains switched on in standby mode.

7.2 Measuring Equipment and Assembly

DC Voltmeter	e.g. UDS 5, URE
RF spectrum analyzer up to 100 MHz	e.g. FSA

Calibrated frequency counter 10 MHz (included in FSA)

Laboratory oscilloscope with approx. 100-MHz bandwidth

7.3 Troubleshooting

Frequency error	Trace the tuning voltage as far as to the oscillator. Recalibrate in the case of small deviations due to aging (see section 7.4.5).
Level error	Trace control signal OSCOFF. Check operating point of output stage. Check output level of oscillator (see section 7.4.2.)

7.4 Testing and Adjustment

7.4.1. Current Consumption, Data Transmission

- Switch on cold instrument using the power switch (not from standby mode) and press the PRESET key.

Current consumption at +12V is greater during warmup period and must decrease after 5min (VAR02) or 10min (VAR04/06) at 25 grad Celsius ambient temperature to its settled value.

Current consumption	VAR 02	VAR 04/06
+5V	max. 2mA	
-15V	max. 7mA	
+12V heating	max. 250mA	max. 270mA
+12V settled	max. 130mA	max. 150mA

The module status is encoded by pulldown resistors (R8 to R15) at the parallel port of D1. Open inputs mean "high". The first 4 bits encode the module version, the second 4 bits the modification status.

Version	02	04	06	Status	0	1	2	3	4
Decimal value	1	2	3		0	1	2	3	4

The version/status values in question must be indicated corresponding to fitted resistors in the display when the menu **UTILITIES/DIAG/CONFIG** is selected.

7.4.2. Testing the Oscillator and the 10-MHz Amplifier

- SME setting: **PRESET**

_ The control bit OSCOFF must show "low" potential. The output stage V71 is active, the DC operating point is to be at 5 ±2 V. The signal must reach TTL level at the oscillator output (use oscilloscope for high-impedance measurement).

- Connect spectrum analyzer to X771. The 10-MHz signal is to feature an amplitude of 7.5 ±1.5 dBm and a harmonics suppression >15 dB.

- Select **OSC/SOURCE EXTERN** in the menu **UTILITIES/REF**.

_ The control bit OSCOFF must go to "high" potential, V70 becomes conducting and disables the output stage. The collector voltage of V71 increases to 12 ±1 V. The output signal at X773 must fall below -50 dmB.

7.4.3. Testing the Interrupt Generation (Message OVEN COLD)

As long as the oven of the crystal oscillator has not yet reached nominal temperature, a "high" signal is applied to the input IR0 (pin 39) of the data transmission component D1. This is recognized by the controller in the front module, and the message "OVEN COLD" is produced on the display.

Versions 02 and 04 :

_ With jumper X50 removed, the "OVEN COLD" message must not be caused. If X50/2 is set to "low", an interrupt and thus the message "OVEN COLD" must appear.

- Insert the jumpers on X50/1-2 and X40/1-2.

_ An oscillator after warmup (afer approx. 5 to 10 minutes at 25 degrees) must not produce the "OVEN COLD" message, whereas one that has just been switched on must. An oscillator after warmup must again signal "OVEN COLD" after it has been switched off for some minutes (power off, not standby!).

Version 06 :

- Remove jumpers X40 and X50, apply a DC voltage of 0 to 12 V to X40B. Observe logic level at X60A.

_ High level must appear with a DC voltage below 5.6 ±0.1 V, "low" up to 6.4 ±0.1 V and "high" again above this value.

- Replace jumper X60. Check on the display whether the message "OVEN COLD" appears when varying the DC voltage.

_ Measure the voltage at X40A using the voltmeter (after 5 min operation), nominal value 6.0 ±0.2 V.

- Replace jumpers X40 and X50.

_ An oscillator after warmup (afer approx. 5 to 10 minutes at 25 degrees) must not produce the "OVEN COLD" message, whereas one that has just been switched on must. An oscillator after warmup must again signal "OVEN COLD" after it has been switched off for some minutes (power off, not standby!)

7.4.4. Testing the Diagnosis

The module must be allowed a warmup time of approx. 5 minutes before the measurement.

- Select **ON** in the menu **UTILITIES/DIAG/STATE**. Check the following test points (TPOINT):

Test point	Nominal voltage/V
101	6±0.6 only vers. 06
102	2±0.5

7.4.5. Adjusting the Oscillator

- Connect calibrated frequency counter to the REF socket on the rear panel and measure the output frequency. The instrument must have been in operation or in standby mode for at least 2 hours.

Versions 02 and 04:

- First set in the menue **UTILITITES/PROTECT** LOCK LEVEL 2 to OFF by typing the password **250751**.

- Select **REF OSC** in the menu **UTILITIES/CALIB**. Then select CALIBRATION DATA AND vary using the rotary knob until the nominal frequency of 10.000000 MHz is obtained. The new setting

value is written into the EPROM by means of "**STORE CALIBRATION DATA**".

CAUTION!! This procedure can only be repeated until the memory area reserved in the EPROM is used up. In this case, the flash EPROM must be cleared and written to again by a R&S service department.

Version 06 :

The oscillator of version 06 is mechanically adjusted.

- For this purpose, remove the panelling (see section 6.5).

– The nominal frequency of 10.000000 MHz can be set by means of the trimmer on the lateral surface of the oscillator housing.

7.5 Disassembly and Assembly

Remove instrument panelling (see service instructions for complete instrument SME, section 6.5)

Unlock flat cable connector X22 on the motherboard and remove.

The module is fastened in the slot on the righthand side of the instrument with four screws. Remove the screws and pull out the module so that RF cable W170 can be removed.

Loosen the cable clamp on the flat cable and take out the module.

For replacing the module, proceed in the reverse order.

7.6 External Interfaces

Pin	Name	Inp./Output	Origin/Destination		Value range	Signal description
X22.4,8,10,14,15						Ground
X22.16	OPTTUNE	Input	A7		0..12V	Tuning voltage
X22.13	SERBUS-CLK	Input	A3, FRO	X50.40	HCMOS level	Serbus clock
X22.11	SERBUS-DAT	bidir.	A3, FRO	X50.39	HCMOS level	Serbus data
X22.09	SERBUS-SYNC	Input	A3, FRO	X50.37	HCMOS level	Serbus synchronization
X22.07	SERBUS-INT	Output	A3, FRO	X50.38	HCMOS level	Serbus interrupt
X22.05	RES-P	Input	A3, FRO	X50.28	HCMOS level	Serbus reset
X22.03	DIAG-5V	Output	A3, FRO	X50.44	-5V...5V	Diagnosis
X22.02	VAS12-P	Input	A2, POWS1		11.50V...12.50V max. 250mA	Supply voltage analog
X22.01	VD-5P	Input	A2, POWS1		5.10V...5.25V max. 2mA	Supply voltage digital
X22.06	VA15-N	Input	A2, POWS1		-15.75V...-14.85V max. 2mA	Supply voltage analog
X771	OPT10	Output	A70	A7	10MHz, 7dBm	10-MHz output

X22 is the flat cable plug, X771 the SMB output socket.

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet

Part lists
in numerical order

Listes des pièces détachées
par numéros de référence

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
B40	EO 10MHZ-QU.OSZ.OCXO 12V 10MHZ CRYSTAL OSCILLATOR NUR VAR/ONLY MOD: 06	0803.8980.00	TELEQUARZ	R&S-ZCHNG.0803.8980	
B50	EO 10MHZ-QU.OSZ.OCXO CRYSTAL OSCILLATOR 10 MHZ NUR VAR/ONLY MOD: 02	1039.1410.00	KVG	OCXO-S15	
B60	EO 10MHZ-QU.OSZ.OCXO CRYSTAL OSCILLATOR NUR VAR/ONLY MOD: 04	1039.1427.00	ERC	EROS-750-RSR-6	
C1	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C2	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C3	CE 1UF +-10% 25V 3528 TANTALUM CHIP CAPACITOR	CE 0007.7217.00	SPRAGUE	293D 105 X9 025 B2T	
C4	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C11	CE 1UF +-10% 25V 3528 TANTALUM CHIP CAPACITOR	CE 0007.7217.00	SPRAGUE	293D 105 X9 025 B2T	
C40	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C54	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR NUR VAR/ONLY MOD: 06	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C64	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C66	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C70	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C71	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	AVX	1206 5A 102 FAT00J	
C72	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C73	CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6C0G 390F50ZPT	
C74	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C75	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C76	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	MURATA	GRM42-6C0G 181F50ZPT	
C78	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C79	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
D1	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	BG 0008.6143.00	THESYS	TH3032.1C	
D30	BL PC74HCT4094T 8ST.SHREG 8-STAGE SHIFT&STORE REG.	0007.6885.00	PHILIPS	(PC)74HCT4094(D)	
D40	BL PC74HCT4051T 8CH.A.MUX ANALOG MULTIPLEXER	0007.6827.00	PHILIPS	(PC)74HCT4051(T)	
D45	BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER	BL 0007.6340.00	PHILIPS	(PC)74HCT132(D/T)	
L1	LD 4,7UH BEI 1,35A0,240HM CHOKE	LD 0026.4084.00	DALE	IM 6	
L2	LD 22UH 10% 0,14A 1210 RF CHOKE	LD 0520.7886.00	SIEMENS	B82422-A1223-J(K)100	
L40	LD 1,50UH10%0,220HM0,560A CHOKE	LD 0067.2886.00	DALE	IM2	
L70	LD 100UH 10% 0,06A 1210 RF CHOKE	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	
L71	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L72	LD 2,2UH 10% 0,27A 1210 RF CHOKE	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
N50	BO TL072ACD 2XFET OPAMP OPERATIONAL AMPLIFIER NUR VAR/ONLY MOD: 06	0803.1057.00	TEXAS	TL 072 ACDR	
N60	BO LM2903D 2XLP COMPAR DUAL NUR VAR/ONLY MOD: 06	0520.7734.00	SIGNETICS	LM2903(D)	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R1	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R3	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R4	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R8	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R12	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NUR VAR/ONLY MOD: 02 06	RG 0007.0793.00	ROEDERSTEI	D25	
R13	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NUR VAR/ONLY MOD: 04 06	RG 0007.0793.00	ROEDERSTEI	D25	
R16	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R17	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R19	RG 475 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6079.00	PHILIPS_CO	RC02	
R21	RG 4K75 +-1% TK100 1206 RESISTOR CHIP	RG 0007.5820.00	PHILIPS_CO	RC02	
R22	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R29	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R40	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R49	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R50	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NUR VAR/ONLY MOD: 06	RG 0007.0793.00	ROEDERSTEI	D25	
R51	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR NUR VAR/ONLY MOD: 06	RG 0007.0793.00	ROEDERSTEI	D25	
R53	RG 18,2KOHM+-1%TK100 1206 RESISTOR CHIP NUR VAR/ONLY MOD: 06	RG 0007.5850.00	ROEDERSTEI	D25	
R54	RG 9,09KOHM+-1%TK100 1206 CHIP RESISTOR NUR VAR/ONLY MOD: 06	RG 0007.0787.00	PHILIPS_CO	RC02	
R55	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R56	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP NUR VAR/ONLY MOD: 06	RG 0007.5843.00	PHILIPS_CO	RC02	
R57	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP NUR VAR/ONLY MOD: 06	RG 0007.5743.00	ROEDERSTEI	D25	
R58	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP NUR VAR/ONLY MOD: 06	RG 0007.5843.00	PHILIPS_CO	RC02	
R59	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R65	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	PHILIPS_CO	RC02	
R70	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R71	RG 4K75 +-1% TK100 1206 RESISTOR CHIP	RG 0007.5820.00	PHILIPS_CO	RC02	
R72	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	PHILIPS_CO	RC02	
R73	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	PHILIPS_CO	RC02	
R75	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	ROEDERSTEI	D25	
R76	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R78	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R79	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
V67	AE BZV55/C5V6 0.5W ZDI ZENER DIODE	AE 0006.9845.00	PHILIPS	BZV55B5V6	
V70	AK BFS17 N 15V 25MA 1 GHZ WIDEBAND TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
V71	AK BFS17 N 15V 25MA 1 GHZ WIDEBAND TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V72	AD 1N4448 75V UDI DIODE	AD 0012.0700.00	PHILIPS_SE	1N4448 "	
V75	AE HSMS2800 SCHOTTKY SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V80	AE BZV55/C4V7 0.5W ZDI ZENER DIODE	AE 0006.9822.00	PHILIPS	BZV55B4V7	
W710	DY DF-KABEL W710 CABLE W710	1036.7682.00			
X40	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 3-POLIG/PINS	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X50	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 3-POLIG/PINS	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X711	FJ EINBAUSTECKER F.GS SMB PLUG	FJ 0063.5168.00	ROSENBERGE	59S106-400-D3	

ROHDE&SCHWARZ

XY-Liste

XY List

Erklärung der Spaltenbezeichnungen:

el. Kennz.	Bauelement-Kennzeichen
Seite	Leiterplatten-Seite, auf der sich das Bauelement befindet
X/Y	Koordinaten (in Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt
Planq., Bl.	Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement

Explanation of column designations:

Part	Identification of instrument part
Side	Side of the PC board on which instrument part is positioned
X/Y	Coordinates (in units of millimeters) of the component on the PC board in reference to zero point
Sqr, Pg	Square and page of the diagram for the respective instrument part

Service-Relevante Bauteile / Service-Relevant Components

Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg
B40	B	81	37	7F	1	D30-A	B	10	21	4D	1	W710	B	13	60	2E	1
B50	B	84	9	7E	1	D30-B				2A	1	X40	B	33	27	7D	1
D1-A	B	6	44	3E	1	D40-A	B	22	22	6C	1	X50	B	10	10	10C	1
D1-B				2C	1	D40-B				3A	1	X711	B	65	58	11E	1

Nicht-Service-Relevante Bauteile / Non-Service-Relevant Components

Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg
C1	B	29	27	4E	1	L71	A	59	51	10E	1	R22	A	4	30	4D	1
C2	B	25	8	4E	1	L72	A	58	55	10E	1	R29	A	27	47	3F	1
C3	A	33	43	4F	1	N50-A	B	22	13	5A	1	R40	A	16	26	6C	1
C4	A	13	53	2C	1	N50-B				8C	1	R49	A	23	19	5A	1
C11	A	42	36	6F	1	N50-C				3A	1	R50	A	15	17	8C	1
C40	B	55	58	6D	1	N60-A	B	10	13	9C	1	R51	A	10	21	8B	1
C54	A	14	13	8B	1	N60-B				9B	1	R53	A	21	12	8B	1
C64	A	23	27	3A	1	N60-C				4A	1	R54	A	17	9	8B	1
C66	A	33	34	7C	1	R1	A	3	34	2E	1	R55	A	15	4	6A	1
C70	A	75	41	9E	1	R2	A	6	42	2E	1	R56	A	7	18	9C	1
C71	A	64	43	10E	1	R3	A	8	42	2E	1	R57	A	11	16	9B	1
C72	A	69	47	10E	1	R4	A	11	42	2D	1	R58	A	7	13	9B	1
C73	A	62	43	10E	1	R5	A	13	42	2D	1	R59	A	4	20	11C	1
C74	A	59	47	10E	1	R6	A	16	42	2D	1	R65	A	23	24	3A	1
C75	A	55	34	11F	1	R7	A	22	36	2D	1	R70	A	81	41	8E	1
C76	A	58	58	11E	1	R8	A	22	38	3D	1	R71	A	62	17	8E	1
C78	A	48	29	11F	1	R9	A	22	41	3D	1	R72	A	73	43	9E	1
C79	A	41	19	8D	1	R10	A	22	43	3D	1	R73	A	72	37	9E	1
D45-A	B	20	10	5C	1	R11	A	22	46	3D	1	R75	A	67	47	9E	1
D45-B				11C	1	R12	A	22	48	3D	1	R76	A	56	37	10F	1
D45-C				6B	1	R13	A	22	51	3D	1	R78	A	48	31	11F	1
D45-D				6A	1	R14	A	21	53	3D	1	R79	A	30	19	8D	1
D45-E				2A	1	R15	A	20	56	3D	1	V67	A	27	29	3A	1
L1	B	29	32	2E	1	R16	A	14	45	2D	1	V70	A	75	35	9E	1
L2	B	29	52	2E	1	R17	A	11	45	2C	1	V71	A	69	39	9E	1
L40	B	42	56	6E	1	R19	A	75	22	8E	1	V75	A	61	39	10E	1
L70	A	52	46	9F	1	R21	A	29	39	6F	1	V80	A	53	37	11F	1

ROHDE&SCHWARZ

SERVICE INSTRUCTIONS

Option FM Modulator SM-B5

1036.8489.02

Contents

7. Checking and Repair of the Module

7.1 Functional Description

The "FMOD" module provides the analog frequency and phase modulation. It can be fitted optionally. The output signal of the module "Digital Synthesis" (input X67, FDSYN) is modulated with the FM/PHIM signal and is then passed to the "Summing Loop" (output X69, FDFM). The reference frequency 100 MHz for the control loops is supplied by the "Reference/Step Synthesis" module (input X65, REF100).
The module can be divided into three function units:

- FM-deviation attenuator with the function blocks SWITCH MATRIX, DEVIATION ATTENUATOR, PREEMPHASIS, BUFFER and DEVIATION ADJUSTMENT
- FM and PHIM control loops with the function blocks FM OSCILLATOR, FM LOOP INTEGRATOR, FM BUFFER, FM DIVIDER, REFERENCE DIVIDER, PHASE DETECTOR, IMPULSE SWITCH, PHIM PLL and CONTROL VOLTAGE for PHIM
- Mixer stage with the function blocks LO AMPLIFIER, MIXER1, BANDPASS FILTER, MIXER2 and OUTPUT AMPLIFIER

7.1.1 FM-Deviation Attenuator

The four AF inputs EXT1, EXT2, INT1 and INT2 are provided for the input of the modulation signals. The AC/DC isolation for the two external modulation inputs is effected by the switch D200. The modulation signals are applied individually to one of the two modulation channels via the switches D210, D215 and D220 . Either single-tone or dual-tone modulation are possible.
The amplifiers N220 and N230 provide the signals for the dual-channel D/A converter D240, which sets the fine deviation at a resolution of 12 bits, each. The subsequent summing amplifier N240 adds the signals of the two modulation channels.
The modulation signal FMGROB is passed via the subsequent deviation attenuators D250 either directly or via the distortion circuit PREEMPHASIS to the FM-PHIM switch D480. Subsequent to passing the DEVIATION ADJUSTMENT (N490) and the range switch (FMRANGE), the control signal U-MOD passes to the FM OSCILLATOR.
The signals PHIMREF and FMREF for the PHIM or the FM control loop are decoupled by means of the BUFFER AMPLIFIER N260.
The level on EXT2 is monitored by the window comparator N280, which supplies an interrupt (INT1) if the level differs from the rated level ($1V_S$) by ± 2%, if it is operated in the EXT-AC mode. This window voltage implies a tolerance of ± 1%. The signals EXT2-HIGH or EXT2-LOW indicate the respective status.

7.1.2 FM and PHIM Control Loops

The 100-MHz VCO (FM OSCILLATOR) provides two tuning inputs. The centre frequency is readjusted via the tuning diode V328, the actual modulation is effected by the diodes V318-V327.
The VCO can be operated in two control loops. If FM is selected, the oscillator is readjusted in a slow frequency control loop with approx. 2-Hz bandwidth. In this case, the modulation is outside the control bandwidth.
If PHIM is selected, the modulation is carried out in a phase-locked loop with a control bandwidth of approx. 300 KHz. The

tuning voltage of frequency adjustment is stored in order to ensure that the phase- locked loop operates also in the linear characteristic range of the deviation diodes. This is effected via the window comparator N455, which compares the FM control voltage and the control voltage for PHIM during FM operation and which supplies control signals (COUNT1, COUNT2) in case of deviation. The control signals trigger an 8-bit counter in the gate array FMDCSYNC which corrects the tuning voltage for PHIM via the 8-bit D/A converter D450, thus minimizing also the settling procedure with switching back to FM.
The oscillator signal and the 100-MHz reference signal are divided by the factor 10 by the FM DIVIDER and the REFERENCE DIVIDER and then applied to the PHASE DETECTOR D410.
If the frequencies differ, one of the two outputs supplies a pulse sequence, the duty factor of which changes according to a sawtooth (P401, P402). The repetition frequency is the difference frequency. The sawtooth voltage is obtained by lowpass filtering, it is differentiated (C404, C405) subsequently and supplied to the gate array FMDCSYNC as trigger signals.
The gate array supplies pulses (A, B, C) derived from the reference frequency PFD2 with two pulse durations selectable via FM-RANGE, which correspond to the two deviation ranges. Depending on the frequency offset, either a positive or negative voltage with this pulse duration is passed by D420 via the range switch D430 to the FM-LOOP INTEGRATOR N430. Between the pulses, an analog control current is applied to the integrator via C406 and C410.
The modulation signal FMREF decoupled via N260 and D270 is also applied to the integrator with inverted sign, thus allowing for FM-DC modulation. The control voltage then only changes, if the average timings of the two signals are different.
In the PHIM operating mode, the FM control loop is switched off by means of the control signal PHIMOD and the PLL is switched on (D415).
In case of a phase difference, one output of the phase detector provides a pulse sequence, the mean value of which increases linear with increase of the phase difference. This sequence is superimposed by the modulation voltage. The phase detector is not operated in its zero point, in order to obtain a minimum PHIM distortion factor.(Adjust the distortion factor using R244).
The modulation signal PHIMREF is applied to the PLL in the subsequent PHIM PLL (summing amplifier N475 and control amplifier N480) and the sum signal passes via the amplifier N490 to the FM OSCILLATOR.
The FM MONITOR (N300) or the PHIM MONITOR (N485) watch the respective control voltage and trigger an alarm, if one of the PLLs unlocks (Serbus interrupt).
The modulated signal FMMOD is decoupled via the FM BUFFER and, subsequently, is passed as LO signal to the mixer stage.

7.1.3 Mixer Stage

Since the input frequency of the digital synthesis FDSYN must be retained, it is first up-converted by means of the fixed frequency REF100 (MIXER1). The LO-AMPLIFIER V510 supplies the required LO level of the reference signal.
The BANDPASS FILTER (110 to 120 MHz) between MIXER1 and MIXER2, which is required for suppression of the reflection band and other spurious signals is realized by a combination of highpass and lowpass filters isolated by the stages V540 and V550. This combination consists of two Cauer highpasses of 7th order and one Cauer

lowpass of 7th order, the latter minimizes the group delay distortion of the DDS signal.
The modulated 100-Hz signal FMMOD is down-converted at the MIXER2 such that the input frequency is obtained again. The amplifier V575 is followed by a pin-diode switch (V580-V582), which through-connects the signal to the OUTPUT AMPLIFIER with modulation switched on. When modulation is switched off, the signal FDSYN is passed by directly to the OUTPUT AMPLIFIER.
The signal is routed to the output socket X69 via a lowpass which suppresses the harmonics.

7.2 Measuring Equipment and Accessories

- RF spectrum analyzer (e.g., FSA)
- Modulation analyzer including distortion and level meters (e.g., FMA)
- Function generator, 10 Hz to 2 MHz (e.g., AFS)
- AF voltmeter, 10 Hz to 2 MHz (e.g., URE)
- DC voltmeter, 5-digit (e.g., UDS5)
- Oscilloscope, frequency range > 300 MHz
- Service kit (1039.3520)

7.3 Troubleshooting

The rated values of the diagnostic points, which are checked during troubleshooting procedures, are given in Section 7.4.7.3.

7.3.1 Errors with Frequency Modulation

FM control loop beyond the tolerance **Error message "FM MODULATOR FAILURE"**	Check, if the control voltage is out of tolerance using diagnosis 501, otherwise, the FM MONITOR is faulty Read diagnosis 505 (FM1/2 SOURCE OFF). The offset voltage measured must be small, otherwise, check deviation attenuator according to Section 7.4.2. Check FM OSCILLATOR acc. to 7.4.3.1 Set FM OSCILLATOR to 100±0.5MHz using C329, subsequently, check FM correction circuit acc. to 7.4.5.3.
FM distortion factor too large	Check distortion factor of the modulation signal f=1KHz at X24A and X49BA. If distortion factor is > 0.1%, check FM deviation attenuator or modulation source Adjust FM OSCILLATOR acc. to 7.4.3.2, then adjust acc. to 7.4.3.3

FM deviation incorrect or FM frequency response too large	Check the FM deviation attenuator according to 7.4.2 Adjust frequency deviation acc. to 7.4.3.3
FM-DC Centre-frequency deviation too large	Read out diagnosis 505 (FM1/2 SOURCE OFF). Only a small offset voltage must be measured, otherwise, check deviation attenuator acc. to 7.4.2. Adjust FMAC centre-frequency according to 7.4.5.1 Adjust FM correction according to 7.4.5.2 Check FM correction circuit according to 7.4.5.3
Undue residual FM	Check FM correction circuit acc. to 7.4.5.3 Check analog control current at C406 and C410

7.3.2 Errors with Phase Modulation

PHIM control loop out of tolerance **Error message "PM MODULATOR FAILURE"**	Check, if PHIM MONITOR is faulty, by measuring the voltage at window comparator N485 pin2/5 Check TUNING VOLTAGE for PHIM, read out diagnosis 501 Check FM OSCILLATOR acc. to 7.4.3.1 Check the PLL according to 7.4.4.3
PHIM distortion factor too large	Check distortion factor of the modulation signal f=1KHz at X24A and N260 Pin6. If distortion factor is > 0.1%, check FM deviation attenuator and modulation source Adjust PHIM distortion factor acc. to 7.4.4.1 Adjust FM OSCILLATOR acc. to 7.4.3.2, subsequently, adjust acc. to 7.4.3.3

PHIM deviation incorrect or PHIM frequency response too large	Check FM deviation attenuator according to 7.4.2 Adjust phase deviation acc. to 7.4.4.2 Check PLL acc. to 7.4.4.3

7.3.3 Spectral Purity of the Output Signal

Spurious signals with FM-DC mode	Check BANDPASS FILTER acc. to 7.4.6.1 Check BYPASS SWITCH acc. to 7.4.6.2
Spurious signals with PHIM mode	Check bandpass filter (80 to 120 MHz) of the FM BUFFER between V355 and X35 Check bandpass filter (80 to 120 MHz) of the LO AMPLIFIER between V510 and MIXER1

7.3.4 Level Error of the Output Signal

No level or level too small with modulation switched on	Check FM BUFFER acc. to 7.4.3.4 Check LO AMPLIFIER using diagnosis 503 Check BANDPASS FILTER acc. to 7.4.6.1 Check BYPASS SWITCH and OUTPUT AMPLIFIER acc. to 7.4.6.2
No level or level too small with modulation switched off (FM1/2 OFF)	Check BYPASS SWITCH and OUTPUT AMPLIFIER acc. to 7.4.6.2

7.4 Checking and Adjustment

All measured values without tolerance information are recommended values. Voltages given without any further designation are DC voltages.
The service kit contains an adaptor which can be used to make the board accessible. The adaptor is inserted into the chassis instead of the board and, subsequently, the RF connections at the corresponding sockets on the lower side are reconnected. The board can then be plugged onto the adaptor.
When removing the jumper X35 or interrupting the signal lines, which influence the output frequency, the instrument must be PRESET subsequent.

7.4.1 Testing Data Transmission and Power Supply

(see circuit diagram, sheets 2 and 7)
According to the instrument standard, the FMOD module is controlled via a serial interface using the component SERBUS-D. The data are transmitted on two different subaddresses. The MSB of each subaddress is transmitted first and is applied to Q8 (Pin 11) of the corresponding latch. The settings and associate data can be looked up in Section 7.4.7.1.
The power consumption of the module can be checked by connecting an ammeter instead of the coils L92, L93, L94 and L105. The rated values for the respective supply voltages can be looked up in Section 7.6.

7.4.2 Testing the FM Deviation Attenuator

(cf. circuit diagram, sheets 3 and 5)
- Apply an AF frequency (given in the table below) of 1 V_s to the sockets EXT1 or EXT2 on the front module
- Measure the level at the jumpers X24A or X49B using an AF voltmeter. This level is used as reference for further measurements. All measured values refer to this level.

- Settings: **FREQUENCY 1000 MHz**
  FM1 SOURCE EXT1
  FM2 SOURCE EXT2

Setting (FM DEVIATION1/2)	AF frequency	Measured value X24	Measured value X49
500 KHz	1 KHz	Reference (2.35 V_s)	Reference (1.2 to 1.9 V_s)
	10 Hz	0 to 0.5 dB	0 - 0.5 dB
	2 MHz	0 ± 2 dB	0 ± 2 dB
1000 KHz	1 KHz	0 ± 0.05 dB	6 ± 0.05 dB

7.4.3 Testing and Adjustment of the FM OSCILLATOR

(cf. circuit diagram, sheets 4 and 5)
It is necessary for adjustment of the FM oscillators (7.4.3.2 and 7.4.3.3) that the FM correction works, however, it need not be adjusted.

7.4.3.1 Testing the FM OSCILLATOR

The FM oscillator is checked without setting an FM deviation

- Settings: **FM1 SOURCE EXT1**
  FM1 DEVIATION 0 KHz

Test point	Type of signal	Rated value
P302	Supply voltage	11.5 to 12 V
P303	Supply voltage	-12 to -11.5 V
X32AB	Working point of the deviation diodes	5 to 11.5 V
X34AB	RF voltage, VCO	- 20 dBm / 50 Ω, approx. 100MHz

7.4.3.2 Adjustment of the Distortion Factor and Presetting of FM Deviation and Control Voltage

- Remove jumper X35 and connect a modulation analyzer incl. distortion and level meter to X35CD
- Connect a DC voltmeter to P301

- Settings: **FREQUENCY 1000 MHz**
  FM1 DEVIATION 500 KHz
  FM1 SOURCE LFGEN1
  LFGEN1 FREQ 1 KHz

▶ Preset the control voltage at P301 to 7 V ± 1 V using C329.
▶ Preset frequency deviation to approx. 500 KHz using R490.

▶ The distortion factor is adjusted using R321. Due to the use of different deviation diodes, several distortion factor minima may arise on the characteristic, which is why the complete characteristic should be swept once and then set the point with minimum distortion factor, accordingly. The control voltage and the frequency deviation should be set to their rated values during distortion factor adjustment and afterwards.

- Subsequent to adjustment, the jumper X35 is fitted again.

7.4.3.3 Adjustment of the Control Voltage and the Frequency Deviation

The module must be covered by the screening cover for exact adjustment of the control voltage and the frequency deviation. Prior to adjustment, plug in all jumpers according to the circuit diagram.
It is assumed that the mixer module is working.

- Connect modulation analyzer to the RF output.

- Settings: **FREQUENCY 100 MHz**
  FM1 DEVIATION 62.5 KHz
  FM1 SOURCE LFGEN1
  LFGEN1 FREQ 1 KHz

▶ The control voltage can be read via the diagnosis 501. It is set to 7 V ± 0.25 V using C329.
▶ Set the frequency deviation to 62.5 KHz using R490.

7.4.3.4 Level Adjustment and Testing of the FM BUFFERS

- Settings: **FM1 DEVIATION 0 KHz**
  FM1 SOURCE EXT1

▶ The rated value at X35CD is 7 ± 1 dBm. It can be set using R345.
▶ Further rated levels and DC operating points in the RF path can be looked up according to 7.4.7.2.

7.4.4 Phase- locked Loop

(cf. circuit diagram, sheet 5)
The FM oscillator must have been adjusted prior to adjusting the PLL.

7.4.4.1 Adjustment of the PHIM Distortion Factor

- Settings: **FREQUENCY 100 MHz**
  PM1 DEVIATION 0.625 rad
  PM1 SOURCE LFGEN1
  LFGEN1 FREQ 1 KHz

▶ If the phase deviation is not set correctly, it is first preset to approx. 0.625 rad using R483.
▶ The distortion factor is adjusted to minimum using R444.

7.4.4.2 Adjustment of the Phase Deviation

- Connect a modulation analyzer to the RF output.

- Settings **FREQUENCY 100 MHz**
  PM1 DEVIATION 0.625 rad
  PM1 SOURCE LFGEN1
  LFGEN1 FREQ 1 KHz

▶ The phase deviation is set to 0.625 rad using R483.

7.4.4.3 Testing the PLL

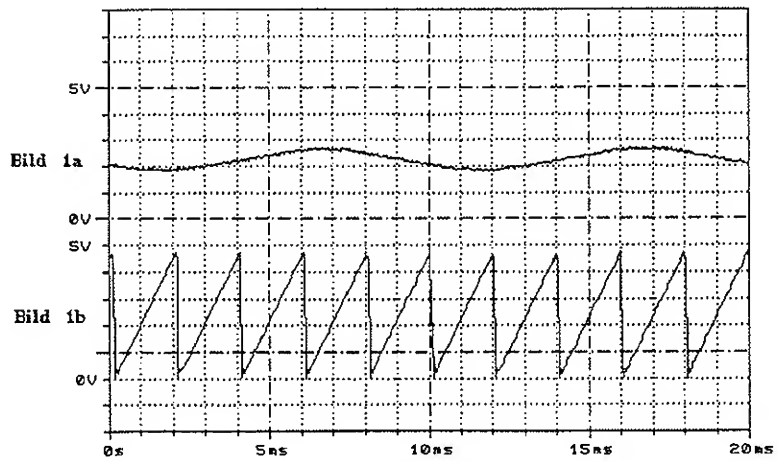
Check the subsequent voltages and signal characteristics at the test points listed below using a probe at the oscilloscope.

Settings: **FREQUENCY 100 MHz**
PM1 DEVIATION 0.625 rad
PM1 SOURCE LFGEN1
LFGEN1 FREQ 1 KHz

Test point	Rated value	Remark
P400	5V	Supply voltage
P401	2.25V+0.75V_{ss}	Pulses from phase difference + const. phase offset (subs. to lowpass) see fig. 1a
P403	ca. 5mV	Reset pulses subsequent to lowpass filtering
P301	approx. 7V	Control voltage
X37A	5V_{ss}	TTL, 100 MHz modulated
X37B	5V_{ss}	TTL, 100 MHz reference

When troubleshooting, we recommend that you open the PLL by removing jumper X49. To check the phase detector, apply a DC voltage to X49.3 and set it such that the RF output frequency is greater than 100 MHz. You should now see a sawtooth voltage at test point P403 as shown in figure 1b. If you change the applied DC voltage such that the output frequency drops below 100 MHz, you should see the sawtooth voltage at test point P401. The repetition frequency of the sawtooth voltage corresponds to the difference in frequency to the set 100 MHz.

Fig. 1a: Control loop locked in, AF = 1 KHz, deviation = 5 rad on board
Fig. 1b: Control loop not in order (P401 or P403)



7.4.5 Frequency Control Loop

(cf. circuit diagram, sheet 5)
Adjustment of the frequency control loop (7.4.5.1) requires prior adjustment of the FM OSCILLATOR. When checking the control loop it is assumed that the oscillator oscillates on 100 ± 0.5 MHz. If not, it must be set to this frequency using C329.

7.4.5.1 Adjustment of the FMAC Centre-Frequency Deviation

This adjustment can only be performed on modules having a revision index of AEI 04 or higher.
It is used to adjust VLF-dependent centre-frequency deviations which may occur due to asymmetries in the FM control loop.
First, with FM switched off, measure the output frequency. It is used as a reference value in the adjustment that follows.

- Connect spectrum analyzer to RF output
- Connect LF output with EXT1 input

- Settings
  Reference meas.: **FREQUENCY 1000 MHz**
  FM1 SOURCE OFF
  FM2 SOURCE OFF
- Settings
  Adjustment: **FM1 DEVIATION 500 KHz**
  FM1 SOURCE EXT1
  EXT1 COUPLING AC
  LF OUTPUT FREQ 1 KHz
  VOLTAGE 1.000 V

▶ Using R437 and with modulation switched on, adjust the centre-frequency to the previously measured reference value.

7.4.5.2 Adjustment of the FM Correction

The module must be covered by the screening cover for adjustment of the FM correction. Prior to adjustment, all jumpers must be plugged in according to the circuit diagram.
For modules having a revision index of AEI 04 or higher, the adjustment can only be carried out if the centre-frequency was previously adjusted according to 7.4.5.1.

- Connect DC voltage source 0 V, ± 1 V to EXT1
- Read in control voltage via diagnosis 501

- Settings: **FREQUENCY 1000 MHz**
  FM1 SOURCE EXT1
  FM1 EXT COUPLING DC

The control voltage is measured with a DC voltage of 0 V. It is adjusted to minimum deviation with preset DC deviation. The deviation of the control voltage should be nearly identical with +1 V and -1 V set.

Frequency deviation FM1 DEVIATION	Adjustment element	Rel. variation of the tuning voltage
525 KHz	R429	< ± 15 mV (up to AEI 03) < ± 5 mV (AEI 04 or higher)
33 KHz	R427	< ± 2 mV (up to AEI 03) < ± 1 mV (AEI 04 or higher)

7.4.5.3 Testing the Control Loop

- Connect DC voltage source 0 V, ± 1 V to EXT1

- Settings: **FREQUENCY 1000 MHz**
  FM1 SOURCE EXT1
  FM1 EXT COUPLING DC
  FM1 DEVIATION 1000 KHz

Check the subsequent voltages and signal characteristics at the test points listed below using a probe on the oscilloscope.

Test point	Modulation voltage	Rated value	Remark
P301		7V	Control voltage *
P400		5V	Supply voltage for PHASE DETECTOR and FMDCSYNC
P401	V_{mod}=1V V_{mod}=-1V	approx. 300mV$_{ss}$ 5V$_{ss}$	Reset pulses subs. to lowpass filtering see fig. 2a Sawtooth voltage with difference frequency see fig. 3a
P402	V_{mod}=1V V_{mod}=-1V	5V$_{ss}$ 5V + about 300mV$_{ss}$	Sawtooth voltage with difference frequency see fig. 2b Reset pulses subs. to lowpass filtering see fig. 3b

Test point	Modulation voltage	Rated value	Remark
P404	V_{mod}=1V V_{mod}=-1V	2.1V -2.1V	Modulation signal to loop integrator
P405	V_{mod}=1V V_{mod}=-1V	TTL TTL	Pulses f. integrator see fig. 4a Pulse f. integrator see fig. 4b
P406 P407		5V -5V	Supply voltage for PULSE SWITCH Supply voltage for PULSE SWITCH
P408		7V	Tuning voltage for PHIM *
P409 P410		5V 5V	Output voltages window comparator with pulses with voltage difference *
X37A X37B		$5V_{ss}$ $5V_{ss}$	TTL, 100MHz modulated TTL, 100MHz reference

* The indicated voltages can only be verified if the control loop is locked.

When troubleshooting, we recommend that you open the control loop by removing jumper X36. To check the test points listed above, you should first make sure that the FM oscillator is oscillating at 100 ± 0.5 MHz. To do this, you can either retune the centre-frequency using C329 or apply an appropriate DC voltage to X36.2.

Fig. 2a: Test point P401, V_{mod}=1V
Fig. 2b: Test point P402, V_{mod}=1V

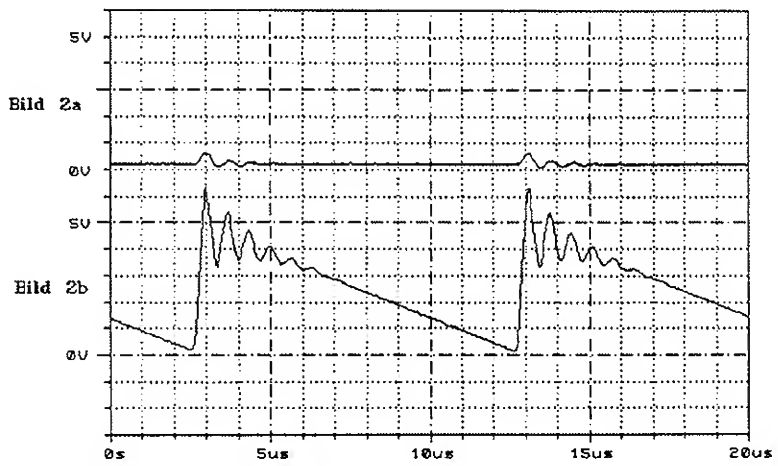


Fig. 3a: Test point P401, V_{mod}=-1V
Fig. 3b: Test point P402, V_{mod}=-1V

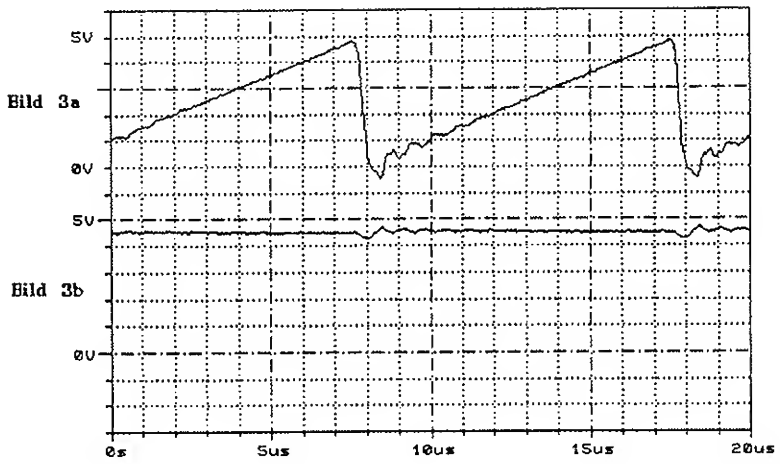
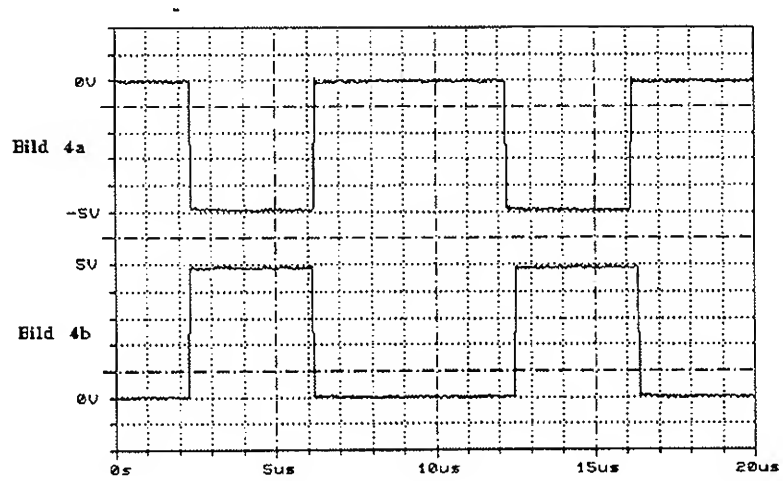


Fig. 4a: Test point P405, V_{mod}=1V
Fig. 4b: Test point P405, V_{mod}=-1V



7.4.6 Mixer Stage

7.4.6.1 Testing the BANDPASS FILTER

- Remove jumper X35
- Carry out the check at X52AB or X57AB using a spectrum analyzer

- Settings: **FREQUENCY 1348.94 MHz**
  FM1 DEVIATION 0 KHz
  FM1 SOURCE EXT1

Test point	RF level with 114.3606 MHz	RF level with 85.6394 MHz
X52AB	- 39 dBm	- 37 dBm
X57AB	- 29 dBm	≤ - 109 dBm

▶ Check of the DC operating points and the rated RF levels in the RF path can be carried out according to 7.4.7.3.

7.4.6.2 Testing BYPASS SWITCH and OUTPUT AMPLIFIER

The FM OSCILLATOR and the FM correction must be adjusted prior to testing the two modules.

- Connect DC voltage source + 1 V to EXT1.
- Connect spectrum analyzer to RF output

- Settings: **FREQUENCY 1348.94 MHz**
  LEVEL 0 dBm

Setting	RF level with 1348.94 MHz	RF level with 1349.94 MHz	DC voltage N595 Pin6
FM1 SOURCE EXT1	≤ - 80 dBm	0 dBm	- 13 V
FM1 EXT COUPLING DC			
FM1 DEVIATION 1 MHz			
FM1/2 OFF	0 dBm	≤ - 80 dBm	13 V

▶ Check of the DC operating points and the rated RF levels in the RF path can be carried out according to 7.4.7.3.

7.4.7 Tables and Interfaces

7.4.7.1 Digital Interface

Subaddress 0(Serout, CLK1, WR1):

Latch		Designation	Function		
D155	11	SWITCHMATRIX0	Switch matrix for EXT1/2 and INT1/2 on FM1/2	0=OFF	1=INT1-FM1
	12	SWITCHMATRIX1		0=OFF	1=EXT1-FM1
	13	SWITCHMATRIX2		0=OFF	1=EXT2-FM1
	14	SWITCHMATRIX3		0=OFF	1=EXT1-FM2
	7	SWITCHMATRIX4		0=OFF	1=EXT2-FM2
	6	SWITCHMATRIX5		0=OFF	1=INT2-FM2
	5	PREON	Preemphasis	0=OFF	1=ON
	4	PRE50/75		0=75µs	1=50µs

Latch		Designation	Function		
	11	FMDC	FM-DC/AC switch	0=FMAC	1=FMDC
	12	ACDC2	AC/DC switch	0=AC	1=DC
	13	ACDC1	for EXT1 and EXT2	0=AC	1=DC
D150	14	PHIMOD	FM/PHIM switch	0=FM	1=PHIM
	7	DIAG-ENA	Diagnosis on/off	0=OFF	1=ON
	6	DMUX2			MSB
	5	DMUX1	Diagnoses 0 to 7		
	4	DMUX0			LSB

Subaddress 1 (Serout, CLK2, WR2):

- Settings: **FREQUENCY 1000 MHz**
  FM1 SOURCE EXT1
  FM2 SOURCE EXT2

The individual bits are checked by setting the same frequency deviation for both channels. The deviation FM1 is set first.

Dev. setting in Hz	D165 Pin 13 12 11	D170 Pin 4 5 6 7 14 13 12 11	D175 Pin 4 5 6 7 14 13 12 11
580	1 1 0	0 1 0 0 0 1 0 0	1 0 0 0 0 0 0 1
1160	1 1 0	0 0 1 0 0 0 1 0	0 1 0 0 0 0 0 1
2320	1 1 0	0 0 0 1 0 0 0 1	0 0 1 0 0 0 0 1
4130	1 1 0	1 0 0 0 1 0 0 0	0 0 0 1 0 0 0 1
Für further testing, only the deviation on channel 1 is set (FM2 DEVIATION = 0).			
8.2k to 16.3k	0 1 0	x x x x x x x x	x x x x 0 0 1 0
16.4k to 32.7k	0 1 0	x x x x x x x x	x x x x 0 1 0 0
32.8k to 65.5k	0 1 0	x x x x x x x x	x x x x 1 0 0 0
65.6k to 1M	0 1 1	x x x x x x x x	x x x x x x x x
FM1/2 OFF	x 0 x	x x x x x x x x	x x x x x x x x

7.4.7.2 Operating points and Levels of RF Amplifiers

The quality of the RF paths can be checked using an RF probe at the spectrum analyzer. Make sure that the ground connection is low-resistant.

Amplifier		Working point	RF level, frequency	Remark
V330	Pin2	8V		FM DEVIATION 0
	Pin1	0.8V	1dBm, 100MHz	Meas. at C333-R340/1
V340	Pin1	7V	0dBm, 100MHz	FM DEVIATION 0
V350	Pin3	5.9V	6dBm, 100MHz	FM DEVIATION 0
V355	Pin4	10.4V	9dBm, 100MHz	FM DEVIATION 0 50Ω at X35CD
V510	Pin4	5.2V	7dBm, 100MHz	
V540	Pin4	7.2V	-13dBm, 115MHz	FM DEVIATION 0
		0V		FM OFF
V550	Pin4	7.2V	-5dBm, 115MHz	FM DEVIATION 0
		0V		FM OFF
V575	Pin3	4.8V	-4dBm, 15MHz	FM DEVIATION 0
			≤ -55dBm	FM OFF
V584	Pin3	5.4V	2 dBm	

7.4.7.3 Diagnostic Points

Diagnostic pt.	Rated value	Specified range	Remark
500	0V	-10mV to 10mV	0V,10 kOhm,reference
501	7V	2V to 13V	VCO tuning voltage with T = 25 °C
502	0.3V	0.1 to 0.5V	VCO output level, 100 MHz
503	0.25V	0.1 to 0.5V	LO level preceding 1st mixer,100 MHz
504	0.25V	0.1 to 0.5V	Output level to sum. loop or Yig-Pll 10.3 to 15.6 MHz
505	0V	-20 to 20mV	Modulation voltage (offset voltage)

7.5 Removal and Assembly

Subsequent to opening the instrument, unlocking the board and disconnecting the RF connections at X65, X67 and X69, the module can be taken out of its slot.
The screening covers of the board are conventionally screwed. With assembly, the screening cover on the component side should be screwed first. Otherwise, the threaded bolts which the threads are imbedded in, may shrink. If only the screening cover on the component side is removed, the screws of the screening cover on the solder side must at least be undone.

7.6 Interface Description

Pin	Name	Input/Output	Origin/Destin.	Specified range	Signal description
X60.A4	EXT1	Input	A3,FRO	$1V_S$	Modulation voltage
X60.A5	EXT2	Input	A3,FRO	$1V_S$	Modulation voltage
X60.A6	INT1	Input	A10,OPU1 X10.B6 A50,LFGEN X1.A7 A5,MGEN X50.7	$1V_S$	Modulation voltage
X60.A7	INT2	Input	A50,LFGEN X1.A7 A5,MGEN X50.7	$1V_S$	Modulation voltage
X60.A12	SERBUS-CLK	Input	A3,FRO X50.40	HCMOS level	Serbus clock
X60.A14 X60A15	SERBUS-DAT	bidir.	A3,FRO X50.39	HCMOS level	Serbus data
X60.A16	SERBUS-SYNC	Input	A3,FRO X50.37	HCMOS level	Serbus synchronization
X60.A17	SERBUS-INT	Output	A3,FRO X50.38	HCMOS level	Serbus interrupt
X60.A18	RES-P	Input	A3,FRO X50.28	HCMOS level	Serbus reset
X60.A19	DIAG-5V	Output	A3,FRO X50.44	-5V to 5V	Diagnosis
X60.A24	VA15-P	Input	A2,POWS1	14.80V to 15.75V 210 to 280mA 190 to 260mA	Supply voltage, analog FM1/2 OFF FM ON
X60.A26	VA7.5-P	Input	A2,POWS1	7.45V to 7.95V 15 to 35mA 100 to 160mA	Supply voltage, analog FM1/2 OFF FM ON
X60.A28	VD-5P	Input	A2,POWS1	5.10V to 5.25V 45 to 75mA	Supply voltage, digital
X60.A30	VA15-N	Input	A2,POWS1	-15.75V to -14.85V 80 to 130mA 100 to 150mA	Supply voltage, analog FM1/2 OFF FM ON
X65	REF100	Input	A7,REFSS X71	5±1dBm	100MHz, reference
X67	FDSYN	Input	A8,DSYN X89	2±1.5dBm	Dig. synthesis 14.1 to 15.4 MHz
X69	FDFM	Output	A9,SUM X99	2±2.5dBm	Output signal 14.1 to 15.4 MHz

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet

Part lists
in numerical order

Listes des pièces détachées
par numéros de référence

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
C80	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C82	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C84	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C86 ..89	LD T-FILTER 3,3NF SMD SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
C90	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C91	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C92	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C93	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C94	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C100	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C101	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C102	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C105	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C129	CC 47NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5195.00	AVX	1206 5 C 473 KA 3	
C130 ..133	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C136	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C138	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C151	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C166	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C200	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C202	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C220	CC 22PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6C0G 220F50ZPT	
C221	CC 22PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6C0G 220F50ZPT	
C226	CC 27PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C227	CC 27PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C230	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C233	CC 100PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F50ZPT	
C239	CC 15PF+-1% 50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6C0G 150F50ZPT	
C240	CC 12PF+-1% 50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8744.00	MURATA	GRM42-6C0G 120F50ZPT	
C241	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C250	CC 15PF+-1% 50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6C0G 150F50ZPT	
C258	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C259	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C260	CC 33PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6C0G 330F50ZPT	
C261	CK 10NF +-1% 63V RM5 KP POLYPROPYLENE CAPACITOR	CK 0007.7652.00	ROEDERSTEI	KP1830-310 06 1 3 W	
C262	CK 10NF +-1% 63V RM5 KP POLYPROPYLENE CAPACITOR	CK 0007.7652.00	ROEDERSTEI	KP1830-310 06 1 3 W	
C263	CK 10NF +-1% 63V RM5 KP POLYPROPYLENE CAPACITOR	CK 0007.7652.00	ROEDERSTEI	KP1830-310 06 1 3 W	
C270	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C271	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
C272	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C274	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8444.00	AVX	1206 5 C 222 KA 3	
C275	LD T-FILTER 3,3NF SMD SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
C276	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C277	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C278	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C279	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C280 ..289	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C290	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C293	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C296	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C297	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C298	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C300	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C310	LD T-FILTER 3,3NF SMD SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
C323	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C324	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C325	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C326	CC 2,7PF+-0,1PF500V PELL UHF-CAPACITOR	CC 0570.9430.00	TEKELEC	501 CHB 2R7 BWL	
C327	CC 4,7PF+-0,1PF500V PELL CAPACITOR	CC 0580.9540.00	ATC	ATC100B 4R7 BW500XR	
C329	CT 13PF TAUCHTR.RD7X12 AIR-TYPE TRIMMER	CT 0092.4266.00	TEKELEC	TL 244	
C330	CC 5,1PF+-0,1PF500V PELL CAPACITOR	0456.4534.00	TEKELEC	501 CHB 5R1 BVL	
C331	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6C0G 150F50ZPT	
C332	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6C0G 150F50ZPT	
C333	CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8667.00	MURATA	GRM42-6C0G 1R0 C50PT	
C334	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C335	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C336	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C337	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C338	CE 100UF+-20% 20V TANTAL CAPACITOR	1081.1867.00	SPRAGUE	595D107X0020R2T	
C339	CE 100UF+-20% 20V TANTAL CAPACITOR	1081.1867.00	SPRAGUE	595D107X0020R2T	
C340	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C342	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C343	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C344	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	
C347	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C348	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C350	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	AVX	1206 5 A 471 F 3	
C351	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
C352	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C353	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F50ZPT	
C354	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C355	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C356	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C358	CC 3,3PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6C0G 3R3 C50PT	
C359	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C360	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	
C362	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C363	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C364	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C365	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C366	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6C0G 220F50ZPT	
C375	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C376	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C380	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	
C382	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C383	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C384	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C385	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C386	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6C0G 220F50ZPT	
C395	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C396	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C400	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	MURATA	GRM42-6C0G 181F50ZPT	
C401	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	MURATA	GRM42-6C0G 181F50ZPT	
C402	CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6C0G 470F50XPT	
C403	CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6C0G 470F50XPT	
C404	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	MURATA	GRM42-6C0G 181F50ZPT	
C405	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	MURATA	GRM42-6C0G 181F50ZPT	
C406	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	MURATA	GRM42-6C0G 151F 50PT	
C407	CC 33NF+-10% 50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5172.00	AVX	1206 5 C 333 KA 3	
C408	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C410	CC 1,2NF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7400.00	AVX	1206 5A 122FAT00J	
C414	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C415	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	MURATA	GRM42-6C0G 181F50ZPT	
C416	CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6C0G 470F50XPT	
C417	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C419	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C422	CC 680NF+-10%50V X7R 2220 CERAMIC CHIP CAPACITOR	CC 0007.7517.00	AVX	2220 5C 684KAT00F	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
C423	CC 680NF+-10%50V X7R 2220 CERAMIC CHIP CAPACITOR	CC 0007.7517.00	AVX	2220 5C 684KATOOF	
C433	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	AVX	1206 5A 331 F 3	
C434	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C435	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	AVX	1206 5A 331 F 3	
C436	CE 47UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7300.00	SPRAGUE	293D X9 010 D2W	
C438	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C439	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C440	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C442	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C443	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C445	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C446	CC 1UF+-10% 50V X7R 2220 CERAMIC CAPACITOR	CC 0520.6873.00	AVX	2220 5C 105 KAT**A(F	
C447	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C449	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C450	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C454	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C456	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C460	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C467	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C473	CE 22UF +-10% 10V 7343 TANTALUM CHIP CAPACITOR	CE 0007.7298.00	SPRAGUE	293D226X9020D2W	
C475	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F50ZPT	
C479	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C480	CC 5,6PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8220.00	MURATA	GRM42-6C0G 5R6 C50PT	
C481	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C485	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C486	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C487	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	
C488	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C490	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C494	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F50ZPT	
C495	LD T-FILTER 100PF SMD SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
C496	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C497	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	SPRAGUE	293D 106 X9 025 D2W	
C498	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F50ZPT	
C500	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	
C504	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C506	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C507	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C510	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
C511	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F50ZPT	
C512	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C513	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6C0G 3R3 C50PT	
C514	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C520	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C529	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6C0G 3R3 C50PT	
C531	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C532	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C533	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C534	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6C0G 220F50ZPT	
C535	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C536	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C537	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F50ZPT	
C538	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6C0G 330F50ZPT	
C539	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C540	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C541	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C542	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C543	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C544	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6C0G 220F50ZPT	
C545	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C546	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F50ZPT	
C547	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F50ZPT	
C548	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6C0G 330F50ZPT	
C549	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C550	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C551	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C552	CC 1,5PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8159.00	MURATA	GRM42-6C0G 1R5 C50PT	
C553	CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6C0G 470F50XPT	
C554	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C555	CC 47PF+-1%50V C0G 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6C0G 470F50XPT	
C556	CC 6,8PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8236.00	MURATA	GRM42-6C0G 6R8 C50PT	
C557	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F50ZPT	
C558	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	MURATA	GRM42-6C0G 681F 50PT	
C566	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C570	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F50ZPT	
C571	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C572	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	AVX	1206 A 221 F 3	
C573	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Herstellar Manufacturer	Bezeichnung Designation	contained in
C574	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C575	CC 3,9PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8207.00	MURATA	GRM42-6COG 3R9 C50PT	
C576	CC 270PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8867.00	AVX	1206 5A 271 F 3	
C577	CC 270PF+-1%50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8867.00	AVX	1206 5A 271 F 3	
C578	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C580	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C581	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C582	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C583	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C584	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C585	CC 5,6PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8220.00	MURATA	GRM42-6COG 5R6 C50PT	
C586	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C587	CC 1,8NF+-1% 50V NP0 1206 CERAMIC CHIP CAPACITOR	CC 0007.7423.00	AVX	1206 5A 182 F 3	
C588	CC 10PF+-0,25 50VNP0 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C589	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	PHILIPS_CO	2238 581 16627	
C590	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C598	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C599	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
D100	BL PC74HCT125T 4XBUFF. 3S QUAD LINE DRIVER	BL 0007.5395.00	PHILIPS_SE	(PC)74HCT125(D/T)	
D110	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	BG 0008.6143.00	THESYS	TH3032.1C	
D120	BL PC74HC132T 4XSCHMITT T QUAD 2-INP NAND SCHMITT	BL 0520.7811.00	PHILIPS_SE	(PC)74HC132(D/T)	
D130	BL PC74HC4051T 8CH.AN.MUX 8CHANNEL ANAL.MULTIPLEXER	0007.3592.00	PHILIPS_SE	(PC)74HC4051(D/T)	
D150	BL PC74HC4094T 8ST.BUSREG 8-STAGE SHIFT&STORE REG.	0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D155	BL PC74HC4094T 8ST.BUSREG 8-STAGE SHIFT&STORE REG.	0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D165	BL PC74HC4094T 8ST.BUSREG 8-STAGE SHIFT&STORE REG.	0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D170	BL PC74HC4094T 8ST.BUSREG 8-STAGE SHIFT&STORE REG.	0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D175	BL PC74HC4094T 8ST.BUSREG 8-STAGE SHIFT&STORE REG.	0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D200	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D210	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D215	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D220	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D230	BL PC74HC123T 2XMULTIVIB DUAL MULTIVIBRATOR	BL 0007.3528.00	PHILIPS_SE	(PC)74HC123(D/T)	
D240	BJ DAC8221-FS 2X12B-DAC IC DIGITAL/ANALOG-CONVERT	1036.8595.00	ANALOG_DEV	DAC8221-FS	
D250	BS DG412DY 4X ANALOGSCH ANALOG SWITCH	0520.7728.00	SILICONIX	DG412DY	
D260	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D270	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D285	BL PC74HC123T 2XMULTIVIB DUAL MULTIVIBRATOR	BL 0007.3528.00	PHILIPS_SE	(PC)74HC123(D/T)	
D290	BL PC74HC86T 4X2IN EXOR QUAD 2INPUT EXOOR GATE	BL 0007.3511.00	PHILIPS_SE	(PC)74HC86(D/T)	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
D360	BL 74AC74SC 2XD-FLIPFL DUAL D-TYPE FLIPF	BL 0820.3602.00	FAIRCHILD	74AC74SC	
D370	BL 74AC161SC 4B.BIN CNT 4BIT SYNC.PRES.BIN COUNT.	BL 0820.3519.00	NSC	74AC161(SC)	
D380	BL 74AC74SC 2XD-FLIPFL DUAL D-TYPE FLIPF	BL 0820.3602.00	FAIRCHILD	74AC74SC	
D390	BL 74AC161SC 4B.BIN CNT 4BIT SYNC.PRES.BIN COUNT.	BL 0820.3519.00	NSC	74AC161(SC)	
D400	HS EPROM.FMDC-SYNC	1036.8608.00			
D410	BL 74AC74SC 2XD-FLIPFL DUAL D-TYPE FF	BL 1036.8614.00	TEXAS_INST	CD74AC74M	
D415	BL PC74HC4052T 2X4CH.MUX MULTIPLEXER	0804.1044.00	PHILIPS_SE	(PC)74HC4052(D/T)	
D420	BL PC74HC4053T 3X2CH.MUX ANALOG MULTIPLEXER	0804.0948.00	PHILIPS_SE	(PC)74HC4053(D/T)	
D430	BL PC74HC4052T 2X4CH.MUX MULTIPLEXER	0804.1044.00	PHILIPS_SE	(PC)74HC4052(D/T)	
D440	BS DG413DY 2A2R ANALOGSCH QUAD ANALOG CMOS.SWITCH	1004.7058.00	SILICONIX	DG413DY	
D450	BJ DAC08CS 1X8-DAC D/A-CONVERTER	6024.3137.00	PMI	DAC08C(S)	
D480	BS DG419DY 1XUM ANALOGSCH ANALOG SWITCH	0746.0322.00	SILICONIX	DG419DY	
G280	BO REF01CS 10V 20MA VREF VOLTAGE REFERENCE	1002.5129.00	PMI	REF01C(S)	
L90	LD 4,7UH 10%1,20HM 0,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L91	LD 10UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L92	LD 10UH BEI 0,81A 0,660HM CHOKE	LD 0026.4126.00	DALE	IM 6	
L93	LD 4,7UH 10%1,20HM 0,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L94	LD 10UH BEI 0,81A 0,660HM CHOKE	LD 0026.4126.00	DALE	IM 6	
L105	LD 4,7UH 10%1,20HM 0,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L241	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L270	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L271	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L272	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L323	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L324	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L325	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L326	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L327	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L328	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L330	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L331	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L340	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L354	LD 220NH 10% 0,28A 1210 RF CHOKE	LD 0520.7911.00	SIEMENS	B82422-A3221-J(K)100	
L355	LD 22NH 10% 0,60A 1210 RF CHOKE	1002.4897.00	SIEMENS	B82422-A3220-J(K)100	
L356	LD 220NH 10% 0,28A 1210 RF CHOKE	LD 0520.7911.00	SIEMENS	B82422-A3221-J(K)100	
L357	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L363	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L365	LD 100NH 10% 0,44A 1210 RF CHOKE	LD 0007.9249.00	SIEMENS	B82422-A3101-J(K)100	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
L375	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L383	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L385	LD 100NH 10% 0,44A 1210 RF CHOKE	LD 0007.9249.00	SIEMENS	B82422-A3101-J(K)100	
L395	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L400	LD 47UH 10% 0,08A 1210 RF CHOKE	LD 0008.1693.00	SIEMENS	B82422-A1473-J(K)100	
L401	LD 47UH 10% 0,08A 1210 RF CHOKE	LD 0008.1693.00	SIEMENS	B82422-A1473-J(K)100	
L402	LD 33UH 10% 3,40HM 0,130A CHOKE	LD 0067.3047.00	DALE	IM2	
L403	LD 33UH 10% 3,40HM 0,130A CHOKE	LD 0067.3047.00	DALE	IM2	
L408	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L414	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L415	LD 47UH 10% 0,08A 1210 RF CHOKE	LD 0008.1693.00	SIEMENS	B82422-A1473-J(K)100	
L416	LD 33UH 10% 3,40HM 0,130A CHOKE	LD 0067.3047.00	DALE	IM2	
L417	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L442	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L456	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L507	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L511	LD 220NH 10% 0,28A 1210 RF CHOKE	LD 0520.7911.00	SIEMENS	B82422-A3221-J(K)100	
L512	LD 22NH 10% 0,60A 1210 RF CHOKE	1002.4897.00	SIEMENS	B82422-A3220-J(K)100	
L513	LD 220NH 10% 0,28A 1210 RF CHOKE	LD 0520.7911.00	SIEMENS	B82422-A3221-J(K)100	
L532	LD 72NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9507.00	COMPONEX	E 558 AN-10 0044	
L534	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L537	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L539	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L540	LD 2,2UH 10% 0,27A 1210 RF CHOKE	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L542	LD 72NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9507.00	COMPONEX	E 558 AN-10 0044	
L544	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L547	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L549	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L550	LD 2,2UH 10% 0,27A 1210 RF CHOKE	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L552	LD 112NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9542.00	COMPONEX	E 558 CN-10 0024	
L554	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L556	LD 91NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100	
L566	LD 4,7UH 10% 0,15A 1210 RF CHOKE	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L571	LD 270NH 10%0,160HMO,975A CHOKE	LD 0067.2792.00	DALE	IM2	
L572	LD 0,56UH10%0,500HMO,550A CHOKE	LD 0067.2834.00	DALE	IM2	
L573	LD 270NH 10%0,160HMO,975A CHOKE	LD 0067.2792.00	DALE	IM2	
L576	LD 470NH 10% 0,15A 1210 RF CHOKE	LD 0007.9926.00	SIEMENS	B82422-A3471-J(K)100	
L578	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L580	LD 47UH 10% 0,08A 1210 RF CHOKE	LD 0008.1693.00	SIEMENS	B82422-A1473-J(K)100	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
L581	LD 47UH 10% 0,08A 1210 RF CHOKE	LD 0008.1693.00	SIEMENS	B82422-A1473-J(K)100	
L586	LD 10UH 10% 0,18A 1210 RF CHOKE	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
N200	BO AD744KR FET OPAMP 500NS SETTL. BIFET OPAMP	BO 0854.1754.00	ANALOG_DEV	(AD)744KR	
N210	BO AD744KR FET OPAMP 500NS SETTL. BIFET OPAMP	BO 0854.1754.00	ANALOG_DEV	(AD)744KR	
N220	BO AD829JR HISPEED OPAMP LOW-NOISE HIGH-SPEED AMP	BO 1036.4254.00	ANALOG_DEV	AD829JR	
N230	BO AD829JR HISPEED OPAMP LOW-NOISE HIGH-SPEED AMP	BO 1036.4254.00	ANALOG_DEV	AD829JR	
N240	BO AD843KN FET OPAMP IC OPAMP	1039.1285.00	ANALOG_DEV	AD843KN	
N250	BO NE5534D OPAMP OPERATIONAL AMPLIFIER	0815.7555.00	SIGNETICS	NE5534(D)	
N260	BO AD829JR HISPEED OPAMP LOW-NOISE HIGH-SPEED AMP	BO 1036.4254.00	ANALOG_DEV	AD829JR	
N280	BO LM119J 2X COMPAR COMPARATOR	0007.5337.00	LINEAR_TEC	LM119J (AJ)	
N300	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N420	BO OP97FS LP PREC OPAMP LOW POWER OPAMP	1036.4390.00	PMI	OP97F(S)	
N421	BO OP97FS LP PREC OPAMP LOW POWER OPAMP	1036.4390.00	PMI	OP97F(S)	
N430	BO LT1077S8 LP OPAMP OPAMP	0828.4714.00	LINEAR_TEC	LT1077(S8)	
N440	BO TL072ACD 2XFET OPAMP OPERATIONAL AMPLIFIER	0803.1057.00	TEXAS	TL 072 ACDR	
N455	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N475	BO AD829JR HISPEED OPAMP LOW-NOISE HIGH-SPEED AMP	BO 1036.4254.00	ANALOG_DEV	AD829JR	
N480	BO AD829JR HISPEED OPAMP LOW-NOISE HIGH-SPEED AMP	BO 1036.4254.00	ANALOG_DEV	AD829JR	
N485	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N490	BO AD829JR HISPEED OPAMP LOW-NOISE HIGH-SPEED AMP	BO 1036.4254.00	ANALOG_DEV	AD829JR	
N595	BO NE5534D OPAMP OPERATIONAL AMPLIFIER	0815.7555.00	SIGNETICS	NE5534(D)	
P300 ..303	VL EINPRESSSTIFT 5,6 PIN	VL 0010.7250.00	AMP	1-928776-5	
P400 ..410	VL EINPRESSSTIFT 5,6 PIN	VL 0010.7250.00	AMP	1-928776-5	
R80	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R81	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R82	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R83	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R84	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R85	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R100	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R101	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R102	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R103	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R104	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R105	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R106	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R113	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R114	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R117	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R118	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R122	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R124	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R128	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R129	RG 56,2KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1883.00	DRALORIC	CR 1206	
R130	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R131	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R132	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R133	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R134	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R135	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R136	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	PHILIPS_CO	RC02	
R138	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R150	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R151	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R155	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R164	RG 4K75 +-1% TK100 1206 RESISTOR CHIP	RG 0007.5820.00	PHILIPS_CO	RC02	
R165	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R166	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R170	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R175	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R201	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R203	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R205	RG 1,0MOHM+-1%TK100 1206 CHIP RESISTOR	RG 0815.7532.00	DRALORIC	CRC 1206	
R206	RG 1,0MOHM+-1%TK100 1206 CHIP RESISTOR	RG 0815.7532.00	DRALORIC	CRC 1206	
R210 ..215	RL 0,35W 1 KOHM+-0,1%TK25 RESISTOR	0083.9146.00	DRALORIC	SMA0207	
R220	RL 0,35W2,49KOHM+-0,1%T25 RESISTOR	RL 0083.9900.00	DRALORIC	SMA0207	
R221	RL 0,35W2,49KOHM+-0,1%T25 RESISTOR	RL 0083.9900.00	DRALORIC	SMA0207	
R222	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R223	RG 432 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5689.00	PHILIPS_CO	RC02	
R224	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R225	RG 432 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5689.00	PHILIPS_CO	RC02	
R226	RG 90,9KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1931.00	PHILIPS_CO	RC02	
R227	RG 90,9KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1931.00	PHILIPS_CO	RC02	
R230	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R231	RG 4K75 +-1% TK100 1206 RESISTOR CHIP	RG 0007.5820.00	PHILIPS_CO	RC02	
R232	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R233	RG 4K75 +-1% TK100 1206 RESISTOR CHIP	RG 0007.5820.00	PHILIPS_CO	RC02	
R234	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R240	RG 4,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5814.00	PHILIPS_CO	RC02	
R241	RG 4K75 +-1% TK100 1206 RESISTOR CHIP	RG 0007.5820.00	PHILIPS_CO	RC02	
R242	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R244	RL 0,35W200 OHM+-0,1%TK25 RESISTOR	RL 0083.7808.00	DRALORIC	SMA0207	
R245	RL 0,35W100 OHM+-0,1%TK25 RESISTOR	RL 0083.7220.00	DRALORIC	SMA0207	
R246	RL 0,35W100 OHM+-0,1%TK25 RESISTOR	RL 0083.7220.00	DRALORIC	SMA0207	
R247	RL 0,35W100 OHM+-0,1%TK25 RESISTOR	RL 0083.7220.00	DRALORIC	SMA0207	
R248	RL 0,35W100 OHM+-0,1%TK25 RESISTOR	RL 0083.7220.00	DRALORIC	SMA0207	
R249	RL 0,35W100 OHM+-0,1%TK25 RESISTOR	RL 0083.7220.00	DRALORIC	SMA0207	
R250	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R251	RG 24,3 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5495.00	PHILIPS_CO	RC02	
R252	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	PHILIPS_CO	RC02	
R253	RG 30,1KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5908.00	PHILIPS_CO	RC02	
R254	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R256	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R257	RL 0,35W7,50KOHM+-0,1%T25 RESISTOR	RL 0084.2822.00	DRALORIC	SMA0207	
R258	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R259	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R260	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	PHILIPS_CO	RC02	
R270	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	PHILIPS_CO	RC02	
R274	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R276	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R277	RL 0,35W29,1KOHM+-0,1%T25 RESISTOR	RL 0084.3958.00	DRALORIC	SMA0207	
R278	RL 0,35W129 OHM+-0,1%TK25 RESISTOR	RL 0083.7437.00	DRALORIC	SMA0207	
R279	RL 0,35W3,09KOHM+-0,1%T25 RESISTOR	RL 0084.2080.00	DRALORIC	SMA0207	
R280 ..289	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R290	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	DRALORIC	CR 1206	
R291	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R292	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R293	RG 274 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.4460.00	PHILIPS_CO	RC02	
R294	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R295	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R296	RG 274 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.4460.00	PHILIPS_CO	RC02	
R297	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	PHILIPS_CO	RC02	
R298	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	PHILIPS_CO	RC02	
R299	RG 4,75OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8420.00	PHILIPS	RC 02	
R300	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	

Komp. Nr. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Typ Designation	contained in
R301	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R302	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R303	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R305	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	PHILIPS_CO	RC02	
R307	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	DRALORIC	CR 1206	
R308	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R310	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	PHILIPS_CO	RC02	
R311	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R315	RG 5,620HM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8442.00	PHILIPS	RC 02	
R316	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	
R317	RG 5,620HM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8442.00	PHILIPS	RC 02	
R320	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7259.00	ROEDERSTEI	D25	
R321	RS 0,75W10KOHM+-10%CERMET DEPOS.-CARBON POTENTIOMET	RS 0037.7396.00	BI_TECHNOL	89 P	
R322	RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0770.00	PHILIPS_CO	RC02	
R323	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R324	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	PHILIPS_CO	RC02	
R326	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	
R328	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	PHILIPS_CO	RC02	
R329	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	
R330	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	DRALORIC	CR 1206	
R331	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	DRALORIC	CR 1206	
R332	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R333	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R334	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	DRALORIC	CR 1206	
R335	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	DRALORIC	CR 1206	
R336	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R337	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R338	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R339	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R340	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R341	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	DRALORIC	CR 1206	
R342	RG 56,2KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1883.00	DRALORIC	CR 1206	
R343	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R344	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R345	RS 0,25W200 OHM+-20% SMD POTENTIOMETER	RS 0007.9590.00	BI_TECHNOL	23 B R... TR	
R346	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R347	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R348	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R349	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	PHILIPS_CO	RC02	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R350	RG 11,0 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8655.00	PHILIPS_CO	RC02	
R351	RG 5,620HM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8442.00	PHILIPS	RC 02	
R352	RG 5,620HM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8442.00	PHILIPS	RC 02	
R353	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R354	RG 243 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5620.00	PHILIPS_CO	RC02	
R355	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	PHILIPS_CO	RC02	
R356	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	PHILIPS_CO	RC02	
R357	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R358	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	PHILIPS_CO	RC02	
R359	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R360	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	PHILIPS_CO	RC02	
R361	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	
R362	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R363	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R364	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R365	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R366	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R367	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R368	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R369	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R370 ..373	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R374	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R375	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R376	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R380	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	PHILIPS_CO	RC02	
R381	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	
R382	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R383	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R384 ..393	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R394	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R395	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R396	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R400	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R401	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R402	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R403	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R404	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R405	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R406	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	PHILIPS_CO	RC02	

Komponenten-Nr. Comp. No.	Benennung Designation	Bestellnummer Stock No.	Hersteller Manufacturer	Typ Designation	enthalten in contained in
R407	RG 20,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5866.00	DRALORIC	CR 1206	
R408	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R409	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	PHILIPS_CO	RC02	
R410	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R411	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R412	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R413	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R414 ..418	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R419	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R420	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R421	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R422	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	PHILIPS_CO	RC02	
R423	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	PHILIPS_CO	RC02	
R424	RG 110,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1954.00	ROEDERSTEI	D25	
R425	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	PHILIPS_CO	RC02	
R426	RG 82,5KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1925.00	ROEDERSTEI	D25	
R427	RS 0,25W20KOHM +-20% SMD POTENTIOMETER	RS 0007.9655.00	BI_TECHNOL	23 B R... TR	
R428	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R429	RS 0,25W 1KOHM +-20% SMD RG POTENTIOMETER	RS 0007.9610.00	BI_TECHNOL	23 B R... TR	F
R429	RS 0,25W 1KOHM +-20% SMD RG POTENTIOMETER	RS 0007.9610.00	BI_TECHNOL	23 B R... TR	
R430	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	PHILIPS_CO	RC02	
R431	RL 0,35W2,23KOHM+-0,1%T25 RESISTOR	RL 0083.9817.00	DRALORIC	SMA0207	
R432	RL 0,35W9,31KOHM+-0,1%T25 RESISTOR	RL 0084.3006.00	DRALORIC	SMA0207	
R433	RG 9,09KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0787.00	PHILIPS_CO	RC02	
R434	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	ROEDERSTEI	D25	
R435	RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0735.00	PHILIPS_CO	RC02	
R436	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	ROEDERSTEI	D25	
R437	RS 0,25W500 OHM+-20% SMD POTENTIOMETER	RS 0007.9603.00	BI_TECHNOL	23 B R... TR	
R438	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R439	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R440	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	
R441	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R442	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R443	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R444	RS 0,25W 2KOHM +-20% SMD POTENTIOMETER	RS 0007.9626.00	BI_TECHNOL	23 B R... TR	
R445	RG 68,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1902.00	PHILIPS_CO	RC02	
R446	RG 150 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5972.00	PHILIPS_CO	RC02	
R447	RG 75,0KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1919.00	PHILIPS_CO	RC02	
R448	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R449	RG 7,5KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0764.00	PHILIPS_CO	RC02	
R450	RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0735.00	PHILIPS_CO	RC02	
R451	RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0735.00	PHILIPS_CO	RC02	
R452	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R453	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R454	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R455	RG 1,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9997.00	DRALORIC	CR 1206	
R456	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R457	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	PHILIPS_CO	RC02	
R458	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R459	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	PHILIPS_CO	RC02	
R460	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R461	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	PHILIPS_CO	RC02	
R462	RG 3,92KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5808.00	ROEDERSTEI	D25	
R463	RG 221 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6004.00	PHILIPS_CO	RC02	
R464	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R465	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R466	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R467	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R468	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R469	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R470	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	ROEDERSTEI	D25	
R471	RG 243 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5620.00	PHILIPS_CO	RC02	
R472	RL 0,35W681 OHM+-0,1%TK25 RESISTOR	RL 0083.8827.00	DRALORIC	SMA0207	
R473	RL 0,35W10,0KOHM+-0,1%T25 RESISTOR	RL 0084.3064.00	DRALORIC	SMA0207	
R474	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R475	RG 432 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5689.00	PHILIPS_CO	RC02	
R476	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R477	RG 432 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5689.00	PHILIPS_CO	RC02	
R478	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R479	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R480	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	DRALORIC	CR 1206	
R481	RG 2,43KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5750.00	PHILIPS_CO	RC02	
R482	RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0770.00	PHILIPS_CO	RC02	
R483	RS 0,5W1KOHM+-10%10X10X5 CERMET POTENTIOMETER	RS 0247.5917.00	BI_TECHNOL	72X-R	
R484	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R485	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R486	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R487	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	DRALORIC	CR 1206	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R488	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R489	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R490	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER	RS 0247.7955.00	BI_TECHNOL	72X-R	
R491	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7259.00	ROEDERSTEI	D25	
R492	RL 0,35W 1 KOHM+-0,1%TK25 RESISTOR	0083.9146.00	DRALORIC	SMA0207	
R494	RL 0,35W100 OHM+-0,1%TK25 RESISTOR	RL 0083.7220.00	DRALORIC	SMA0207	
R495	RL 0,35W200 OHM+-0,1%TK25 RESISTOR	RL 0083.7808.00	DRALORIC	SMA0207	
R497	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	ROEDERSTEI	D25	
R498	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R499	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R500	RG 4,75OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8420.00	PHILIPS	RC 02	
R501	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R502	RG 4,75OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8420.00	PHILIPS	RC 02	
R503	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	PHILIPS_CO	RC02	
R504	RG 18,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5850.00	ROEDERSTEI	D25	
R505	RG 12,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8661.00	ROEDERSTEI	D25	
R506	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	DRALORIC	CR 1206	
R507	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R510	RG 8,25OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8488.00	PHILIPS	RC 02	
R511	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	PHILIPS_CO	RC02	
R512	RG 8,25OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8488.00	PHILIPS	RC 02	
R514	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R520	RG 16,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8690.00	PHILIPS_CO	RC02	
R521	RG 16,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8690.00	PHILIPS_CO	RC02	
R525	RG 5,62OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8442.00	PHILIPS	RC 02	
R527	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R528	RG 20,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5472.00	PHILIPS_CO	RC02	
R529	RG 51,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8810.00	PHILIPS_CO	RC02	
R530	RG 20,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5472.00	PHILIPS_CO	RC02	
R540	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	PHILIPS_CO	RC02	
R541	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R542	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	PHILIPS_CO	RC02	
R549	RS 0,25W100 OHM+-20% SMD POTENTIOMETER	RS 0007.9584.00	BI_TECHNOL	23 B R... TR	
R550	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R551	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	ROEDERSTEI	D25	
R552	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R555	RG 8,25OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8488.00	PHILIPS	RC 02	
R556	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	PHILIPS_CO	RC02	
R557	RG 8,25OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8488.00	PHILIPS	RC 02	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	contained in
R565	RG 1KO +-1% TK100 1206 CHIP RESISTOR	RG 0006.7271.00	ROEDERSTEI	D25	
R566	RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0735.00	PHILIPS_CO	RC02	
R567	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R568	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R569	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R571	RG 51,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8810.00	PHILIPS_CO	RC02	
R575	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	DRALORIC	CR 1206	
R576	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	ROEDERSTEI	D25	
R578	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	PHILIPS_CO	RC02	
R579	RG 4,75OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8420.00	PHILIPS	RC 02	
R581	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	PHILIPS_CO	RC02	
R582	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	PHILIPS_CO	RC02	
R584	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	ROEDERSTEI	D25	
R585	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	PHILIPS_CO	RC02	
R586	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R588	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	DRALORIC	CR 1206	
R589	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R590	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	PHILIPS_CO	RC02	
R591	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R592	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R593	RG 18,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5850.00	ROEDERSTEI	D25	
R594	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	ROEDERSTEI	D25	
R595	RG 5,11KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0729.00	ROEDERSTEI	D25	
R596	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	PHILIPS_CO	RC02	
R597	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	PHILIPS_CO	RC02	
R598	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R599	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
U520	BM SRA1 MIXER 0.5GHZ MIXER	BM 0207.3465.00	MINI-CIRCU	SRA1	
U570	BM SRA1 MIXER 0.5GHZ MIXER	BM 0207.3465.00	MINI-CIRCU	SRA1	
V136	AE BZV55/C5V6 0.5W ZDI ZENER DIODE	AE 0006.9845.00	PHILIPS	BZV55B5V6	
V201	AD BAV99 75V DUO UDI HIGH-SPEED DOUBLE DIODE	AD 0911.0092.00	VALVO	BAV99	
V202	AD BAV99 75V DUO UDI HIGH-SPEED DOUBLE DIODE	AD 0911.0092.00	VALVO	BAV99	
V318	AE BB909B-SELEKT CDI VARACTOR	0520.7563.00	PHILIPS_SE	OF4205	
V319	AE BB909B-SELEKT CDI VARACTOR	0520.7563.00	PHILIPS_SE	OF4205	
V320	AE BB909B-SELEKT CDI VARACTOR	0520.7563.00	PHILIPS_SE	OF4205	
V321	AE BB809 26/ 6PF CDI TUNING DIODE	0092.9616.00	VALVO	BB809	
V322	AE BB909B-SELEKT CDI VARACTOR	0520.7563.00	PHILIPS_SE	OF4205	
V323 ..328	AE BB809 26/ 6PF CDI TUNING DIODE	0092.9616.00	VALVO	BB809	

Komp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	contained in
V330	AM SST310 N-D 25V JFET JUNCTION FET	1036.4577.00	SILICONIX	SST310-T1	
V332	AE BZV55/C7V5 0,5W ZDI ZENER DIODE	AE 0007.3428.00	PHILIPS_SE	BZV55B7V5	
V333	AE BZV55/C5V1 0.5W ZDI ZENER DIODE	AE 0006.9839.00	PHILIPS_SE	BZV55B5V1 (GEG)	
V334	AE BZV55/C5V1 0.5W ZDI ZENER DIODE	AE 0006.9839.00	PHILIPS_SE	BZV55B5V1 (GEG)	
V335	AE BZV55/C7V5 0,5W ZDI ZENER DIODE	AE 0007.3428.00	PHILIPS_SE	BZV55B7V5	
V336	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V337	AK BC860B P 45V 200MA TRANSISTOR	AK 0007.7975.00	MOTOROLA	BC860B	
V340	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81 (-F1049)	
V350	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81 (-F1049)	
V355	AK BFG97 NPN 15V 100MA 5 GHZ WIDEBAND TRANSISTOR	0008.1741.00	PHILIPS	BFG97	
V358	AE HSMS2810 SCHOTTKY SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS-2810	
V360	AK BFS17 N 15V 25MA 1 GHZ WIDEBAND TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V380	AK BFS17 N 15V 25MA 1 GHZ WIDEBAND TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V412	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V413	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V424	AD BAV99 75V DUO UDI HIGH-SPEED DOUBLE DIODE	AD 0911.0092.00	VALVO	BAV99	
V430	AE 1N827 6,2V REFDI ZENER REFERENCE DIODE	AE 0418.0029.00	COMPENSATE	1N827(A)	
V455	AE BZV55/C5V6 0.5W ZDI ZENER DIODE	AE 0006.9845.00	PHILIPS	BZV55B5V6	
V470	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V471	AE 1N827 6,2V REFDI ZENER REFERENCE DIODE	AE 0418.0029.00	COMPENSATE	1N827(A)	
V488	AD BAS16 75V UDI HIGH-SPEED DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V510	AK BFG97 NPN 15V 100MA 5 GHZ WIDEBAND TRANSISTOR	0008.1741.00	PHILIPS	BFG97	
V513	AE HSMS2810 SCHOTTKY SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS-2810	
V540	AK BFG97 NPN 15V 100MA 5 GHZ WIDEBAND TRANSISTOR	0008.1741.00	PHILIPS	BFG97	
V550	AK BFG97 NPN 15V 100MA 5 GHZ WIDEBAND TRANSISTOR	0008.1741.00	PHILIPS	BFG97	
V566	AK BC860B P 45V 200MA TRANSISTOR	AK 0007.7975.00	MOTOROLA	BC860B	
V567	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V575	AK BFS17 N 15V 25MA 1 GHZ WIDEBAND TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V580	AE BAR14-1 DUAL 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1 (-A772)	
V581	AE BAR14-1 DUAL 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1 (-A772)	
V582	AE BAR14-1 DUAL 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1 (-A772)	
V584	AK BFS17 N 15V 25MA 1 GHZ WIDEBAND TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V588	AE HSMS2800 SCHOTTKY SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
X24	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 3-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X32	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X34	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X35	FP STECKERLEISTE 4P.2R. CONNECTOR 4POL	FP 0831.9442.00	BINDER	11-0161-00-04	

Comp. No.	Designation	Stock No.	Manufacturer	Designation	
X36	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X37	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X38	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X40	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X41	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X49	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 4-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X52	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 2-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X57	FP STIFTLEISTE 36P.R2,54 PIN CONNECTOR 21-POLIG	FP 0242.3600.00	MPE	STL1-1180-14GGT8-036	
X60	FP STECKERLEISTE 32POL. CONNECTOR 32P.	FP 0008.5718.00	DEUT_ELCO	16 8457 064 002 027	
X65	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X67	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X69	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	

ROHDE&SCHWARZ

XY-Liste

XY List

Erklärung der Spaltenbezeichnungen:

el. Kennz.	Bauelement-Kennzeichen
Seite	Leiterplatten-Seite, auf der sich das Bauelement befindet
X/Y	Koordinaten (in Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt
Planq., Bl.	Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement

Explanation of column designations:

Part	Identification of instrument part
Side	Side of the PC board on which instrument part is positioned
X/Y	Coordinates (in units of millimeters) of the component on the PC board in reference to zero point
Sqr, Pg	Square and page of the diagram for the respective instrument part